*ADVISORY*

*DEPARTMENT OF THE IMPERIAL COLLEGE*

*OF TROPICAL AGRICULTURE.*

IMPERIAL MYCOLOGICAL
2 NOV. 1937
INSTITUTE

# REPORT

ON THE

# DEPARTMENT OF AGRICULTURE

# ST. LUCIA,

# 1936.

ISSUED BY THE COMMISSIONER OF AGRICULTURE

[ Price Sixpence. ]

St. Lucia.
Printed by the Government Printer at the Government Printing Office.
1937.

## FORWARDING DISEASED SPECIMENS FOR EXAMINATION.

### PLANTS.

A few fragments of a diseased plant are of practically no value for scientific investigation. Sufficient material should always be sent so that the primary cause of the trouble may be located.

Full particulars should be given as to the nature and extent of the damage *done*, the part of the plant attacked, the nature of the soil, drainage, the prevalence of the disease, when it was first noticed, and whether any similar kind of disease has previously been observed in the neighbourhood.

Specimens of portions of plants attacked by fungi may be sent green, packed in a well ventilated box if the time taken for delivery is under 24 hours, but if delivery takes a longer time, all leaves or soft fruits should be placed in a bottle or corked tube containing a solution made of one part rum or methylated spirit and two parts water. As many stages of the disease as possible should be sent, with notes as to the nature of each stage.

All specimens should be accompanied by detailed particulars of the nature of the disease and shall be addressed to :—

The Department of Agriculture,
Castries.

---

### INSECTS.

Observations and specimens of economic importance or otherwise will always be gladly received. The following directions should be observed in this respect :—

Living insects should be packed with a supply of the plant on which they are found feeding and the box should have some small holes pierced for the purposes of ventilation. These should be carefully packed in such a way as to prevent their becoming crushed in transit.

If it is desired to preserve specimens they should be put up in bottles with tightly fitting corks. Methylated spirits, diluted rum, etc., make excellent preserving fluids.

Scale insects, etc., should be forwarded on the portion of the plant on which they are found.

If in doubt as to the best method of forwarding specimens, a letter should be sent asking for instructions and stating full details.

In all cases full particulars should be forwarded as to the nature and extent of damage done, along with any other important points that may have been noticed.

All specimens should be addressed to :—

The Department of Agriculture,
Castries.

*ADVISORY*
*DEPARTMENT OF THE IMPERIAL*
*COLLEGE OF TROPICAL AGRICULTURE.*

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1937.

# LETTER OF TRANSMITTAL.

TRINIDAD,
25th March, 1937.

Sir,

I have the honour to submit herewith the Annual Report of the Agricultural Department, St. Lucia, for the year ended December 31st, 1936.

2. During the year the Island suffered considerably from extremes of weather; the dry season was unusually dry and severe and towards the end of the year serious floods were experienced causing considerable damage to cultivations and roads.

3. The value of agricultural and allied products exported during 1936 was £120,358. This is the highest value since 1929 and is 18.8% better than the average value over the past five years.

4. The sugar industry in spite of record low prices showed a further increase in value from £40,827 in 1935 to £61,490 in 1936. This industry is not without its difficulties and one of the factories is likely to close down after the 1937 crop unless alternative arrangements can be made to carry on the cultivation. This matter was receiving the attention of Government and of this Department towards the end of the year.

5. Second in importance to the sugar industry is the lime industry which dropped in value from £21,124 in 1935 to £15,680 in 1936. Most of this drop can be accounted for by a very considerable carry over of lime oil which however was sold early in 1937.

6. Serious losses have been experienced by lime and other citrus growers due to fungus and insect pests. The former can be controlled by budding on the resistant sour orange stock but the latter is proving more difficult to combat. The appointment of a whole time entomologist to study the pest has been approved and funds have been provided by the Colonial Development Fund Committee supplemented by contributions from local growers.

7. The value of coconut products exported increased from £9,503 in 1935 to £13,169 in 1936. With the increase in the world price of copra the value of coconut products should continue to increase. Coconut groves in St. Lucia are remarkably healthy and free from serious diseases and pests.

8. The banana industry continues to expand and values went up from £5,209 in 1935 to £8,910 in 1936. The most serious handicap to the development of this industry is the lack of Island transport due to inadequate roads. The Fruit Company rightly demands fruit of good quality, freshly cut and free from bruising, this is difficult to obtain under St. Lucia conditions and the percentage of rejects is heavy. The construction of roads capable of carrying motor lorry traffic is essential for the development of this industry.

9. The increase in the value of cocoa exported from £6,042 in 1935 to £9,627 in 1936 is mainly due to the increase in price experienced during the year. It is interesting to note that £3,193 worth of cacao was exported from St. Lucia to Trinidad during the year.

10. The value of exports of fresh fruit other than limes and bananas remained at £4,251 which is about the average of the past five years.

11. The Experiment Station at Union has been maintained satisfactorily. The lime plots originally intended for manurial experiments have been used by Mr. Fennah, the Entomologist, as experimental plots for the control of citrus weevils. The scope of the nursery work has been enlarged to cope with the demand for limes budded on the resistant sour orange stock.

12. Attention has been given to agricultural education in the Primary Schools. In this connection the work of Mr. R. W. Niles, who for many years was responsible for conducting school examinations, deserves special mention in view of the fact that this officer retired during the year after completing a long period in the service of the Department.

13. The Board of Agriculture, established three years ago, continued to function during the year and many matters of importance were referred to it by Government.

14. The many lines of activity of the Agricultural Department are recorded in this report. It is evident that a great deal of essential work continues to be undertaken by the Agricultural Officers.

I have, &c.,

G. A. JONES,
*Commissioner of Agriculture.*

His Excellency,
The Governor
of the Windward Islands,
St. Lucia, B.W.I.

## STAFF OF THE DEPARTMENT OF AGRICULTURE, ST. LUCIA.

| | |
|---|---|
| E. A. Walters, F.R.H.S., F.R.M.S. ... ... | Agricultural Superintendent & Land Officer. |
| A. F. Nichols, Dip. Agric. (I.C.T.A.), A.I.C.T.A. [1] ... | Assistant Agricultural Superintendent & Chief Fruit Inspector. |
| G. B. Gregory, Dip. Agric. (I.C.T.A.), [2] ... | Assistant Agricultural Superintendent & Chief Fruit Inspector. |
| R. W. Niles [3] ... ... ... | Agricultural Instructor & Fruit Inspector. |
| G. M. Glasgow [4] ... ... ... | Agricultural Officer & Fruit Inspector. |
| G. M. Glasgow [5] ... ... ... | Agricultural Officer, Class I, & Fruit Inspector. |
| D. A. Alexander [6] ... ... ... | Agricultural Officer, Class II, & Fruit Inspector. |
| A. V. Mondesir ... ... ... | Foreman, Union. |
| Miss A. Inglis [7] ... ... ... | Acting Clerk & Accountant. |
| Miss S. Cox [8] ... ... ... | Assistant Clerk. |
| C. E. Charles [7] ... ... ... | Acting Clerk to Agricultural Superintendent. |
| R. C. Phillip [8] ... ... ... | Under Clerk. |
| C. R. Bascom ... ... ... | Copyist. |

*Government Marketing Depot.*

| | |
|---|---|
| A. E. Adey ... ... ... | Supervising Engineer, Government Cold Storage Plant. |
| A. F. Nichols [1] ... ... ... | Manager, Government Marketing Depot. |
| G. B. Gregory [2] ... ... ... | Manager, Government Marketing Depot. |
| J. F. Girard ... ... ... | Clerk & Chief Packer, Government Marketing Depot. |
| A. F. Romeo [9] ... ... ... | Copyist. |
| G. L. Phillip [10] ... ... ... | Temporary Copyist. |
| G. J. Belizaire [11] ... ... ... | Copyist. |

(1) To 12.3.36. (2) From 9.2.36. (3) Retired 1.10.36. (4) To 31.7.36. (5) From 1.8.36. (6) From 1.8.36. (7) To 31.1.36. (8) From 1.2.36. (9) To 29.2.36. (10) To 13.4.36. (11) 14.4.36.

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NURSERY PLANTS AND SUPPLIES.

# SAINT LUCIA.

# Report of the Department of Agriculture for the year ended December 31, 1936.

## SECTION 1. AGRICULTURE IN THE COLONY.

### 1. Weather Conditions and Agriculture.

Abnormal weather conditions generally formed the principal feature of meteorological interest during the year, both the dry and the wet seasons being relatively severe in their effects as compared with the usual weather conditions experienced during these seasons. Economy in water utilization was necessary during the dry months January to March, in contrast to the wet conditions during the two peak rainfall periods occurring during June and in October—November, when floods were experienced in most of the river valleys. Severe losses were reported from several of the lowland estates under sugar-cane, and in other areas the lime crop due for collection was washed away.

Road transport conditions became increasingly hazardous, due to land-slides and subsidences, during the latter period, and the movement of agricultural produce, particularly bananas, was seriously interfered with. Emergency measures to deal with this problem were again necessitated.

Short spells of heavy winds occurred during the year, but no gales of hurricane force were experienced.

A more detailed analysis of meteorological conditions is appended to this report.

### 2. General Conditions and Progress in the Chief Industries.

#### I. THE SUGAR INDUSTRY.

The sugar industry suffered from a general depression in price average during the year, the export market quotations being approximately £7 17 0 per ton, or 2/- lower than the price £7 19 0 per ton received in 1935, the average London price being 8/6 per cwt. c.i.f. preferential during the year: in 1935—8/10¼ per cwt.

The reaping of the crop was commenced in late February, and by the end of March all factories were in operation, the canes being then somewhat dry owing to very low rainfall and arid conditions which obtained from the beginning of the year. Production again achieved a record, a total of 70,847 tons of cane being reaped by the four factories, from which was extracted 8,117.6 tons of sugars, an extraction ratio of 1 ton of sugar for 8.7 tons of cane, as compared with the ratio of 1 ton to 9.5 of the previous year. The highest and lowest extraction was 1 ton of sugar to 8.1 tons and 10.3 tons of cane respectively. All factories had finished by early June, the generally dry weather having accelerated the movement of the crop. The highest reported yields ranged from 40—45 tons per acre in the best fields, the average tonnage for the Colony being approximately 20 tons of cane per acre. The area under cane was approximately 4,000 acres of which some 20 per cent. was non crop canes, or syrup canes.

Several changes in the industry have been made during the year, notably that of the installation in the Dennery Factory of a 9-roller mill and improved carrier equipment; and in the fields, the greater extension of the standard cane seedling B.H.10 (12) which is replacing other mixed or inferior

types previously cultivated. Drainage methods and the layout of cane-beds have been generally improved, and the long ratoonage system is gradually disappearing. Thus it seems possible that in view of the optimum growth conditions approached by these improvements, the system of "selective reaping" peculiar to the valleys may eventually be dispensed with, without loss of an early "spring" from cut stools, and with a considerable saving of time and labour in the heading and handling of cane.

One factory management has set up an arrangement for manure manufacture under a modified form of the Indore process, and has reported good results in quality and out-put of pen-manure due to the better control of the moisture and biological changes. The product as seen after some six weeks of preparation was short and well-rotted in composition, free from sourness and from leaching such as is frequently the case in exposed pens. It is suggested, however, that more attention should be given to existing methods of estate production of manure on a permanent basis, as being more economical than the Indore process. While manufactured fertilisers give mainly temporary results, pen-manure promotes permanent fertility in the soil, and has a definite function to perform under local conditions.

*Varieties.*

The new cane variety B.2935 was released from quarantine in 1933—4 and has proved popular as a heavy yielding cane in the drier fields. Variety S. C. 12/4 on the other hand was found to dry out rather seriously in the southern soils of calcareous formation.

The Indian cane—Co. 213—has been planted more extensively on drier soils, and as a pioneer cane on newly-cleared land, where it has made good progress. As an economic cane, however, the cost of handling a large bulk in regard to the small production of sugar obtained, may prove it to be unremunerative to the factories, as in the case of the Java canes which have been generally discontinued in the Colony.

*Molasses and Rum.*

There was a corresponding increase in the production of heavy molasses during the year, although the sale of this by-product was slow. The manufacture of rum for local and export markets was also increased, as shewn below under total sugar products manufactured and exported.

The production of fancy molasses, principally for the Canadian market, was also stimulated during the year, and several small factories endeavoured to make an improved grade for export. The market was poor, however, and a higher standard of purity is now being required in order to compete with established marks elsewhere being shipped under "pool" organizations.

The following schedule shows comparatively the production and export of sugar manufactures for the five-year period 1932—6, and indicates an increase of some 29.7 per cent. in export value for 1936 on that of 1932. Production for the year 1936 shews an increase of 2,754 tons on that produced in 1927 (=5,364 tons) and an increase of 2,523 tons of sugar, or 45 per cent. above the *average* for the ten-year period 1927—1936 (=5,595 tons).

| Year | Tons of Cane* | Sugar. | | | Molasses. | Molasses & Syrup. | | Rum. | | | Exported Total Value Sugar Products. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Produced tons | Exported tons | Value £ | Produced gallons | Exported gallons | Value £ | Produced gallons | Exported gallons | Value | |
| | | | | | | | | | | £ | £ |
| 1932 | ... | 5,452 | 4,990 | 46,466 | ... | 32,988 | 1,453 | 30,415 | ... | ... | 47,919 |
| 1933 | ... | 5,474 | 4,940 | 46,493 | 207,000 | 43,260 | 1,417 | 28,540 | ... | ... | 47,910 |
| 1934 | ... | 5,498 | 4,730 | 39,396 | 194,000 | 23,080 | 1,431 | 25,239 | $3\frac{1}{6}$ | 3 | 40,830 |
| 1935 | 67,197 | 7,286 | 6,080 | 48,377 | 256,900 | 168,903 | 2,401 | 31,408 | ... | ... | 50,778 |
| 1936 | 70,847 | 8,118 | 7,707 | 60,358 | 280,951 | 107,128 | 1,132 | 34,551 | $4,091\frac{2}{3}$ | 649 | 62,139 |

* Production from four Factories only and exclud ng Canes for syrup, &c.

*Difficulties in the Industry.*

As envisaged in the report for 1935, the Vieux-Fort sugar industry has been faced with the alternative of further capitalisation, or abandoning sugar-cane as a crop and converting the estates into pasturage, with the existing areas under coconuts to be maintained on a much reduced labour roll. The numbers of persons which would thus be thrown out of employment would still further accentuate the existing distress in this district, and proposals for the conversion of the area into a form of peasant holdings, co-operating with the Factory, were being discussed towards the end of the year. It is hoped that a solution will be arrived at whereby these fertile cane lands will be able to continue under crop-production, and to absorb an increasing proportion of peasant proprietors suited to this form of settlement. Such a policy of organised peasant settlement was recommended by the West Indian Sugar Commission in 1930.

*Housing.* Housing conditions in the agricultural industries have received attention during the year, and it is pleasing to note that the proposals to erect self-contained labourers' barracks with sanitary conveniences, have been proceeded with in one of the more important sugar districts. In this instance, it is reported that a definite proportion of any profit made on the crop out turn will, in future, be set aside for the improvement of living conditions for employees. This development should do much to meet the criticisms and recommendations made on this subject in the report of the West Indian Sugar Commission, 1930, (pp. 53 and 123) of which it may be said to be an indirect result.

*Minimum Wages and Diet.*

The investigations of the Minimum Wage Board, appointed by Government during 1936, have drawn attention to the wages and dietary of the sugar industry employees. It is hoped that the desired improvement in wage earnings could be made collaterally with an effort to educate the labourer and his family to the value of an adequate and balanced diet, and the benefits of hygiene, in combating disease.

## II. THE LIME INDUSTRY.

The ravages of "Red-root" disease, and the continued infestation of roots of trees by the Citrus Weevil *Diaprepes*, were two factors seriously affecting the lime industry of the Colony during 1936. (These problems are more fully dealt with under the respective sections: Plant Pathology and Entomological investigations). The cumulative effect of the breakdown in the root system caused by these disturbances was very evident in several important lime orchards of the Colony, intensified as it was by the drier weather of the two preceding growing seasons of 1934 and 1935. The total output of lime products for the season 1936 has however increased by some seven per cent., this satisfactory return being partly due to some increase from the incoming crop of newly established trees, and also by the drier weather of January to April, which favoured an exceptionally heavy flowering and setting of fruit in all citrus crops. Market conditions generally were sufficiently remunerative to insure that the lime crop was fully collected, and no crop was neglected for reasons of low market prices as in earlier years.

It is therefore instructive to review very briefly the changes in the methods of preparation of the lime crop for market, as compared with those of some twelve years ago (1924) when the total value of exported products of the industry was 82.8 per cent. of the present export value; and the principal article—Concentrated Juice at £22 c.i.f. per pipe, represented two-thirds of the total export value, lime oils at this time being sold at from 4/- to 5/- per pound :—

*Value and kind of Lime Products exported from St. Lucia in 1924 and 1936 shewn comparatively.*

| | Green Limes. | | Raw Lime Juice | | Concentrated Lime Juice. | | Distilled Lime Oil. | | H. P. Lime Oil. | | Estimated Total Crop. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity brls. | Value £ | Quantity gals. | Value £ | Quantity gals. | Value £ | Quantity lb. | Value £ | Quantity lb. | Value £ | Quantity brls. | Value £ |
| 1924 | 2,857 | 2,849 | 8,490 | 589 | 33,718 | 7,204 | 8,815 | 1,578 | 2,618 | 762 | 52,238 | 12,982 |
| Unit Value | ... | 19/11 | ... | 1/5 | ... | 4/3 | ... | 3/7 | ... | 5/10 | ... | 5/- |
| 1936 | 5,731 | 6,977 | 34,171 | 1,405 | 3,317 | 160 | 5,463 | 6,091 | 810 | 1,047 | 22,569 | 15,680 |
| Unit Value | ... | 24/4 | ... | 10*d.* | ... | 1/- | ... | 22/4 | ... | 25/10 | ... | 13/11 |

The above schedule, apart from the drastic fluctuations in value of the products marketed, is illustrative of the growing tendency of the export trade to realise higher values on a very restricted array of products, i.e. Lime Oils and Green Limes, and it is precisely in connection with such products that competition from other sources is most to be feared. Co-operative effort alone can meet the danger of unorganized marketing with its elimination of the grower as a price factor in fixing a reasonable return for his industry. For this reason the growth of the co-operative movement in St. Lucia as evidenced by the successful conclusion of the first year, of the Lime Oils Pooling Scheme is a matter for some congratulation. It is to be hoped that this movement will now broaden and embrace the marketing of green limes also, in view of the fact that the participants in the temporary arrangement to market on the f.o.b. basis, and to eliminate consignment shipments, have not yet subscribed to a definite agreement. The trade is thus likely to be affected by the operations of speculators.

The total exported lime crop of the Colony, calculated as barrels of limes, amounted to 22,569 barrels for the period 1936, valued at £15,680, as compared with 38,189 barrels valued at £21,124 in 1935. The actual crop made during the season, however, was approximately 41,000 barrels when taking into account known products not marketed at the close of the year. The exported crops for the last ten years are given below :—

| Year. | | Quantity Barrels. | Year. | | Quantity Barrels. |
|---|---|---|---|---|---|
| 1927 | ... | 58,948 | 1932 | ... | 44,762 |
| 1928 | ... | 56,186 | 1933 | ... | 44,019 |
| 1929 | ... | 34,483 | 1934 | ... | 45,000 |
| 1930 | ... | 42,844 | 1935 | ... | 38,189 |
| 1931 | ... | 50,339 | 1936 | ... | 22,569 |

The export production of the crop of the Colony for the five-year period is shewn below :—

| | Concentrated Lime Juice. | | Raw Lime Juice. | | Distilled Lime Oil. | | H. P. Lime Oil. | | Green Limes. | | Total Value £ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity gals. | Value £ | Quantity gals. | Value £ | Quantity lb. | Value £ | Quantity lb. | Value £ | Quantity brls. | Value £ | |
| 1932 | 7,280 | 78 | 4,069 | 152 | 10,345 | 11,662 | 1,989 | 3,337 | 3,782 | 5,552 | 20,781 |
| 1933 | 16,208 | 860 | 591 | 40 | 8,056 | 7,412 | 2,582 | 3,021 | 3,758 | 4,445 | 15,778 |
| 1934 | 3,371 | 228 | 10,525 | 471 | 13,406 | 12,275 | 1,251 | 1,868 | 6,001 | 7,010 | 21,852 |
| 1935 | 1,080 | 45 | 29,613 | 854 | 10,264 | 9,673 | 1,504 | 2,517 | 6,619 | 8,035 | 21,124 |
| 1936 | 3,317 | 160 | 34 171 | 1,405 | 5,463 | 6,091 | 810 | 1,047 | 5,731 | 6,977 | 15,680 |

*Conditions in the Industry.*

The restoration of orchards damaged by root disease and weevil depredations has been systematically taken in hand by the managements of the larger estates, and the supply of budded lime plants from the Department's nurseries was accelerated to meet the demand. Several planters have adopted the plan of inarching budded lime trees with the ordinary lime seedling planted alongside, and, by thus developing a double root-system of lime seedling and sour-orange root-stock, hope to maintain satisfactory growth in fields subject to weevil or root-disease die-back. While this is an interesting experiment, it is suggested that complications may later ensue should the seedling lime root be destroyed by *Sphaerostilbe* root-disease fungus, and the possibility arises of complete stem girdling by this fungus, as it may do under suitable conditions. The Department has therefore concentrated on improving conditions for budded limes on sour-orange root-stocks, and the application of lead arsenate as a soil insecticide to the citrus orchards generally, as the first stage in the control of the weevil root pest. The use of seedling lime trees has not been encouraged as it is not yet proved that any immunity to weevil depredations is shewn by the common line under sustained infestation.

The principal points of interest in the industry during 1936 are dealt with below under their respective headings.

*Green Limes.*

The production of green limes for the export trade is receiving closer attention and efforts are being made to induce earlier flowering in the fields, in order to obtain an early setting of fruit free from "Scab" effects of the Wither-tip disease, and to provide green limes at a time when the most profitable demand occurs.

The following tentative suggestions from notes made at the Experimental Station are put forward for the concurrent observations of planters interested in growing for the early lime market :—

The application of a complete fertiliser to trees in September appears to induce a flush of growth which is followed by the maturation of the earlier shoots formed from June onwards, and which arrive at the flowering stage about December. It then depends upon the water relations in the soil, as to whether a moderate flowering is at once proceeded with, or alternatively, that the trees sink into a semi-dormant phase due to the drier climatic conditions, so that flowering is postponed to February and March, or even later, as the main bloom.

From observation of the soil conditions around trees in December, it may generally be found possible to apply water by irrigation periodically from early December until the middle of February, thereby breaking the period of dormancy, and stimulating the trees to fill out young fruit for export, as green

limes, in February to April. As a rough guide, the formation of green limes from the time of appearance of the flower trusses, is taken to be approximately 9 to 12 weeks, as compared with ripe limes requiring a period of some 16—18 weeks to obtain maturity, but development of such fruit is sharply arrested when soil conditions as influenced by sun, wind, and rainfall, become too dry for the movement of food solutions.

The following table indicates the seasonal prices offering and the corresponding shipments of green limes (barrels) during the year 1936 :—

| — | Jan. | Feb. | Mar. | Apl. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Local Prices per brl. | 22-24*s.* | 22-24*s.* | 25*s.* | 23-25*s.* | 22-24*s.* | 18-20*s.* | 12-16*s.* | 12*s.* | 10-12*s.* | 9-10*s.* | 15*s.* | 16-20*s.* |
| F.o b. prices | $8-10 | $10 | $10.50 | $10.50 | $9.00 | $8.00 | $8.00 | $7.50 | $7.50 | $7.50 | $7.50-8. | $7.50-9. |
| Exports—Green Limes (brls.) | 77 | 71 | 223 | 422 | 1,498 | 1,795 | 782 | 373 | 200 | 119 | 60 | 119 |
| Value | £97 | £87 | £268 | £532 | £1,905 | £2,224 | £886 | £442 | £217 | £119 | £73 | £127 |

As will be seen from the above export figures, which are fairly representative of the annual crop movement, the production of green limes does not closely correlate with the maximum prices offering. This is to some extent due to the natural reluctance of growers to pick green fruit when the trees are in main crop bloom, with the risk of injury to the flower trusses and consequent reduction of the main crop, but it is more largely due to the general absence of green limes at this time. The suggestions made above to bring in an early green fruit crop might therefore be applied more generally to estate conditions with possibly remunerative results.

The relative value of main crop limes is regarded as approximately 10/- to 12/- per barrel *net*, at which price it is usually found profitable to allow the limes to ripen for raw lime juice and lime oils. The marketing of an early and profitable crop of green limes would thus to a large extent compensate for losses in the later main crop exposed to disease and storm damage, and would also tend to relieve the lime oils market of excess stocks accumulating later in the year.

The marketing of the green lime crop during the year followed the usual course. Markets were firm and encouraging during early February to April at about $10 f.o.b., declining in June and July to $8, and $7.50 in August. There was a sharp demand for limes towards the end of the year when prices were quoted at $9.00, but only a small crop was available. The bulk of the trade was, as usual, with the New York market, Canadian prices not being attractive and the demand generally being poor. A small trade was carried on with the London market, and an improvement has been noted in the Bermuda trade.

Experimental shipments by the Government Marketing Depot to London during the period of "Sanctions" proved unsatisfactory, and no real progress was made in replacing foreign lemons by local Colonial limes during the time this market was available. The market reported that Italian lemons were being transhipped through California! The report on these experiments is given under the work of the Depot. (Appendix I).

*Lime Juice.*

The raw lime juice markets were more active during the year, and the production of filtered and cleared juices, mainly for the Canadian and New York markets, was accordingly increased during the latter half of the year. Raw juices marketed in Canada require a certificate of freedom from added preservatives, and a statement of the citric acid content.

Quotations for the year on the London market ranged from 2/- to 2/6 per gallon c.i.f. for fine green and top pulp juices respectively; there was, however, very little trade in this direction, and the market is reported to have been seriously affected by the development of the orange and grapefruit juice industry.

*Concentrated Juice.*

There was very little trade in this article, and quotations remained low at from £5 to £7 per pipe c.i.f. London.

*Lime Oils.*

Lime oils represented the greatest value in the export trade in lime products during the year, and Distilled lime oil, as has been usual in recent years, was the principal feature of the lime oil trade. By far the greatest proportion of oils was exported through the pooling system, and from the report of the West Indian Lime Oil Sales Association the first year of operations has ended with generally satisfactory results for the trade.

While it cannot be claimed that lime oil prices have risen over the year, it is evident that the orderly marketing ensured has presented a collapse of prices, which appeared imminent owing to temporary flooding of supplies from other markets. In this connection the following series of actual export values of lime oils from this Colony is a useful commentary :—

| | 1917 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 |
|---|---|---|---|---|---|---|---|---|---|
| Distilled Lime Oil lb. | 1*s.* 4*d.* | 9*s.* 4*d.* | 2*s.* | 1*s.* 11*d.* | 3*s.* 7*d.* | 6*s.* 3*d.* | 19*s.* 11*d* | £1 3 5 | £1 4 11 |
| Handpressed Lime Oil lb. | 5*s.* 3*d.* | 2*s.* 3*d.* | 11*s.* 11*d* | 5*s.* 2*d.* | 5*s.* 10*d.* | 11*s.* 6*d.* | £1 5 6 | £1 13 4 | £2 4 5 |

| | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 |
|---|---|---|---|---|---|---|---|---|
| Distilled Lime Oil lb. | £1 11 1 | £1 6 6 | £1 9 10 | £1 2 7 | 18*s.* 5*d.* | 18*s.* 4*d.* | 18*s.* 10*d.* | £1 2 4 |
| Handpressed Lime Oil lb. | £3 8 10 | £2 11 3 | £1 16 3 | £1 13 7 | £1 3 5 | £1 9 10 | £1 13 6 | £1 5 10 |

The step towards rationalization of this industry thus allows the grower to envisage a time when a rough assessment of the crop value may be taken owing to stable prices, and so to introduce improvements and better production on a small capital, which, until recently, could only be done as a gamble owing to the wide fluctuation of prices.

A meeting of the directorate of the respective Trinidad and St. Lucia Producers Companies was held in Castries on 20th November and was attended by the Commissioner of Agriculture, and a general meeting was subsequently held for members of the co-operating lime interests of both Colonies, at which the Department was also represented. Arrangements were entered into for the continuation of the pooling organisation for a further period, and local members commented on points affecting their interests as producers. The directorate urged the importance of continued co-operative selling, as opposed to individual sales in speculative lots or on

the outside of the market, and congratulated the joint members on their adherence to these principles in the face of pressure to sell outside of the organisation. The officiating members were later entertained by the Board of Directors, and the visitors subsequently returned to Trinidad by air mail.

The Department has continued to facilitate storage and delivery of all lime oils held by the local Company, and sampling has been carried out systematically as a precaution against complaints of defective parcels.

A few cases of such complaints leading to rejection or devaluation of individual parcels, arose during the year, and these are briefly indicated below, with the suggested cause of the defect:—

| | *Complaint.* | *Cause.* |
|---|---|---|
| *Handpressed oil.* | Sediment. | Inadequate filtering. |
| | Discolouration, poor odour. | Oxidation due to exposure, defective or loose corks. When severe, to age, and as above. |
| *Distilled oil.* | Discolouration. | Unripe or overripe limes. |
| | Wax flocculate or oil deposit. | Defective lacquer or inside of container. Contamination by outside container paint due to leakage or filling. |
| | Poor odour, water. | Defective or prolonged distillation. |

The export production of Distilled Lime Oil for the year was 5,463 lb. valued at £6,091, compared with 10,264 lb. valued at £9,673 in 1935. A proportion of the 1936 crop was, however, held in storage unsold at the close of the year, as compared with but a small carry over in the preceding year.

Quotations for distilled oil remained constant at 22/6 per lb. c.i.f. London, and handpressed lime oil was quoted at 35/- per lb. The production of handpressed oil at this figure was not popular, however, and most of the crop was converted to distilled oil.

## III. THE COCONUT INDUSTRY.

The coconut industry increased generally in value and quantity of exports during the year owing to the improved demand for nuts and copra, and has advanced considerably in the position of third staple industry in the Colony. The plantations generally were very free from disease, a few cases of Budrot disease only being reported and treated. Wilting of coconuts was not observed to any extent, and scale-insect infestation was mild.

A very satisfactory out-turn of nuts was reported from most districts and in the better alluvial lands averages up to 70—75 nuts per tree per annum were noted. Not a few cases were observed of trees making a crop of above 100 nuts during the year.

The interplanting of older trees spaced at 30 feet or more has been adopted on certain estates under pure crop conditions, and, where adequate light and root area is guaranteed, this practice seems to be satisfactory and reduces the cost of weeding or growing cover-crops. In this development the increased use of *dwarf* coconuts should be considered, and animal stock must be provided for in separate pastures, or fed in pens for manure-making under better supervision.

The crop season of 1936 was particularly active during the last six month of the year, a temporary lapse being reported during the dry weather of February, and again in June, when the warm weather caused nuts in store to ripen and crack. The monthly exports were as follows:—

| | No. | £ |
|---|---|---|
| January ... ... | 284,256 | 803 |
| February ... ... | 147,710 | 440 |
| March ... ... | 481,937 | 1,341 |
| April ... ... | 265,601 | 723 |
| May ... ... | 411,493 | 1,206 |
| June ... ... | 179,872 | 498 |
| July ... ... | 304,141 | 916 |
| August ... ... | 272,623 | 779 |
| September ... ... | 269,592 | 756 |
| October ... ... | 283,551 | 632 |
| November ... ... | 240,829 | 727 |
| December ... ... | 268,016 | 787 |

The total crop of nuts, mainly of 4″—4½″ diameter with a fair proportion of 5″ and over, amounted to 3,409,621 as compared with 2,814,965 in the previous year, an increase of 21.1 per cent. If the production of copra is included, this brings the total nut production, excluding local consumption of water-nuts and otherwise, to an apparent yield of five million nuts for 1936.

The selected nut trade was carried on more extensively with Canada, the U.S.A., and the United Kingdom, than in previous years, and new destinations featured in this trade on a small scale, as indicated below. The relative quotations were as follows: "Extra large" (5″ diameter and over) 5/—5/10 per 100; "Selects" (4″—4½″) 5/—5/6 per 100; "Culls" (under 4″) 3/9—4/6 per 100, locally.

| Destination | Quantity 1935 No. | Quantity 1936 No. | Value 1935 £ | Value 1936 £ |
|---|---|---|---|---|
| Canada ... | 1,615,105 | 1,680,410 | 4,600 | 5,168 |
| U. S. America ... | 619,610 | 1,127,852 | 1,776 | 3,053 |
| United Kingdom ... | 378,592 | 374,550 | 769 | 906 |
| Barbados ... | 159,844 | 196,815 | 343 | 377 |
| Bermuda ... | 41,322 | 28,194 | 142 | 100 |
| Anguilla ... | ... | 900 | ... | 2 |
| Antigua ... | 300 | 900 | 1 | 2 |
| Montserrat ... | 192 | ... | 1 | ... |
| Total Exports ... | 2,814,965 | 3,409,621 | £7,632 | £9,608 |

*Copra.*

The production of copra was greatly stimulated during the year by the improved condition of the markets, and after a preliminary decline from £16 in January to £13 in May, a steady price improvement took place up to the end of the year, the early December price being £21 17 6 per ton c.i.f London.

The reasons for this welcome recovery are variously given as currency stabilisation, rearmament programmes, and the political disturbances in the Soy-bean producing areas in the East.

The Continental market was not very accessible to West Indian producers owing to the increased freight rates to the Continent, which favoured Straits copra, a reversal of the conditions existing prior to this increase.

Local production amounted to some 306 tons valued at £3,561 as compared with 215 tons at £1,871 in the previous year, and production would probably have been higher had it not been for nut contracts made earlier in the season.

The following figures show the quantity and value of exported coconut products during the past ten years :—

| — | Coconuts No. | Value £ | Copra tons | Value £ | Total Value £ |
|---|---|---|---|---|---|
| 1927 | 96,813 | 351 | 200 | 4,409 | 4,760 |
| 1928 | 141,667 | 444 | 315 | 8,690 | 9,134 |
| 1929 | 295,983 | 1,032 | 359 | 9,878 | 10,910 |
| 1930 | 268,078 | 862 | 400 | 7,428 | 8,290 |
| 1931 | 367,350 | 1,178 | 498 | 5,869 | 7,047 |
| 1932 | 650,240 | 2,430 | 432 | 5,389 | 7,819 |
| 1933 | 1,199,808 | 3,527 | 542 | 5,167 | 8,694 |
| 1934 | 2,616,175 | 7,298 | 302 | 2,592 | 9,890 |
| 1935 | 2,814,965 | 7,632 | 215 | 1,871 | 9,503 |
| 1936 | 3,409,621 | 9,608 | 306 | 3,561 | 13,169 |

For the 13-year period 1924—1936, the calculated nut production of the export industry has risen from approximately half a million nuts valued at £2,403, to nearly five million nuts valued at £13,169, in the meantime having experienced some severe hardship from periodic low prices. It is thus apparent that this crop is eminently suited to agricultural conditions in St. Lucia.

## IV. THE CACAO INDUSTRY.

The cacao industry during the year under report has benefited by a spectacular rise in prices, and as a result there was an increased output of raw cacao for the year. There was a distinct revival in the industry from May onwards owing to improved markets, and the increased prices quoted for good estate cacao and mixed cacaos encouraged growers to give more attention to maintenance. The statistical position of cacao production and consumption generally has definitely improved, and it is hoped that growers, by careful attention to improving yields and maintaining quality, can look forward to steady if not lucrative returns for the established plantations. No new cacao planting has, however, been encouraged, apart from some re-establishment with the selected strains raised from Trinidad seed, which are being prepared by the Department for distribution to suitable areas next year.

The exported crop for the year amounted to 6,538 cwt. valued at £9,627 as compared with 5,605 cwt. valued at £6,042 in the previous year. A considerable part of the trade was, as usual, with the United Kingdom, Trinidad, and Barbados, but the bulk of the crop was shipped to Canada, as shewn in the destinations of exports given below :—

| | 1935. | | 1936. | |
|---|---|---|---|---|
| | Cwt. | £ | Cwt. | £ |
| Canada ... ... ... | 2,698 | 2,856 | 3,934 | 4,831 |
| United Kingdom ... ... | 2,389 | 2,801 | 981 | 1,360 |
| Barbados ... ... | 316 | 214 | 215 | 243 |
| Trinidad ... ... | 167 | 138 | 1,407 | 3,193 |
| British Guiana ... ... | 35 | 33 | ... | ... |
| Total ... ... | 5,605 | 6,042 | 6,538 | 9,627 |

The trend of the market improved steadily throughout the year, quotations of "fine St. Lucia" at 34/6 per cwt. c.i.f. London, in January, being increased to 40/- f.o.b. for sales made in November, and 55/—60/- per cwt. c.i.f. in December, with local quotations at 5*d.* per lb.

The production and value of Cacao exports for the past five years is given below :—

| | Cwt. | Value £ |
|---|---|---|
| 1932 ... | 8,188 | 9,091 |
| 1933 ... | 6,056 | 6,778 |
| 1934 ... | 6,349 | 6,032 |
| 1935 ... | 5,605 | 6,042 |
| 1936 ... | 6,538 | 9,627 |

## V. THE BANANA INDUSTRY.

During the year under review, the Banana industry made steady progress, and competed strongly with the Cacao industry for the position of the fourth most important crop in value of exports from the Colony. Production exceeded the estimate made in 1935 of some 100,000 bunches by achieving a total export crop of 108,633 bunches ending December, 1936 (Canada 108,046). As anticipated, however, serious losses were caused by transport difficulties, and a large number of rejected fruit appeared during the later months of the year. This is indicated in the following returns compiled from statistics supplied by the Canadian Banana Company, and the St.Lucia Banana Association, with estimate of area by the Department :—

I. *Banana Shipments—Canadian Banana Company*, 1936.

| —— | 9's | 8's | 7's | 6's | Total | Counts. |
|---|---|---|---|---|---|---|
| January ... | 908 | 1,148 | 1,586 | 408 | 4,050 | 2,664 |
| February ... | 1,042 | 1,324 | 1,760 | 432 | 4,558 | 3,023 |
| March ... | 1,201 | 1,452 | 1,746 | 524 | 4,923 | 3,294 |
| April ... | 1,363 | 1,728 | 2,174 | 672 | 5,937 | 3,914 |
| May ... | 1,776 | 2,148 | 2,394 | 704 | 7,022 | 4,760 |
| June ... | 3,447 | 3,816 | 4,158 | 1,156 | 12,577 | 8,677 |
| July ... | 3,394 | 3,508 | 3,692 | ... | 10,594 | 7,871 |
| August ... | 4,436 | 4,300 | 4,542 | ... | 13,278 | 9,932 |
| September ... | 3,952 | 4,420 | 5,496 | 1,080 | 14,948 | 10,285 |
| October ... | 2,252 | 2,996 | 4,544 | 2,024 | 11,816 | 7,277 |
| November ... | 2,617 | 3,828 | 6,000 | 1,868 | 14,313 | 8,955 |
| December ... | 842 | 1,244 | 1,944 | ... | 4,030 | 2,747 |
| Total ... | 27,230 | 31,912 | 40,036 | 8,868 | 108,046 | 73,399 |

II. *Banana Exports and Rejects, by Districts*, 1936*

| —— | Stems | Counts | Per cent. | Rejects | Per cent. | Bananas in cultivation No. trees 1936. † |
|---|---|---|---|---|---|---|
| Castries ... | 18,943 | 12,558$\frac{1}{4}$ | 66·3 | 1,341 | 7·1 | 20,000 |
| Dennery ... | 29,662 | 19,794$\frac{1}{2}$ | 66·7 | 1,841 | 6·3 | 45,000 |
| Micoud ... | 23,792 | 17,015$\frac{3}{4}$ | 71·5 | 1,847 | 7·8 | 85,000 |
| Vieux-Fort ... | 210 | 132 | 62·9 | 32 | 15·2 | 5,000 |
| Laborie ... | 5,248 | 3,624$\frac{3}{4}$ | 69·1 | 456 | 8·7 | 24,000 |
| Choiseul ... | 2,746 | 1,678$\frac{3}{4}$ | 61·1 | 282 | 10·3 | 5,000 |
| Soufrière ... | 16,513 | 11,607$\frac{1}{2}$ | 70·3 | 1,082 | 6·6 | 30,000 |
| Canaries ... | 6,551 | 4,178$\frac{1}{4}$ | 63·8 | 567 | 8·6 | 22,000 |
| Anse-la-Raye ... | 1,887 | 1,257 | 66·6 | 242 | 12·8 | 14,000 |
| Gros Islet ... | 2,905 | 1,829 | 63·0 | 160 | 5·5 | 10,000 |
| | 108,457 | 73,675$\frac{3}{4}$ | 67·9 | 7,850 | 7·2 | 260,000=900 acres |

* Statistics supplied by the St. Lucia Banana Association.
† Estimate—Department of Agriculture.

III. *Total Exports from British West Indies to Canadian Banana Coy.*, 1936.

| | 9's | 8's | 7's | 6's | Counts | Counts per cent. |
|---|---|---|---|---|---|---|
| Trinidad ... | 55,033 | 49,832 | 53,844 | 376 | 119,423 | 75 |
| Grenada ... | 48,328 | 42,868 | 51,736 | 12,636 | 109,506 | 70 |
| St. Lucia ... | 27,230 | 31,912 | 40,036 | 8,868 | 73,399 | 68 |
| Dominica ... | 27,852 | 29,448 | 34,270 | 1,952 | 67,561 | 72 |
| St. Vincent ... | 6,190 | 10,180 | 14,754 | 3,036 | 21,961 | 64 |
| Total ... | 164,633 | 164,240 | 194,640 | 26,868 | 391,850 | 71 (Average) |

*Defective fruit.*

As will be seen from the returns in Schedule II above, the proportion of rejected fruit increased rapidly during the wet season, due largely to damage in transport; but also due to an increasing number of scarred and stale fruit.

Scarring and scratching of fruit has been caused by lizards and birds clinging to the young fruit in order to reach the nectar of the flower stalk, and also by the insects that are attracted to this. Growers were accordingly advised to prune away the barren flower stalk as soon as the young fruit had developed sufficiently to allow this. Stale fruit has increased owing to the difficulties of heading-out fruit in the stipulated 48 hours allowed for cutting and shipping, and fruit was thus being cut much too early in several districts. Competition between buyers in the same district further encourages early cutting, and a firm stand has had to be made with buyers who accept stale fruit and so reduce the price paid to growers in order to cover anticipated losses from such fruit when rejected.

Continued supervision in the banana fields, and education in methods of pruning and harvesting, have been consistently carried out by the Department, and it is hoped that with this and the prospective improvement in transport conditions, these initial drawbacks will be overcome and the industry will more readily adapt itself to the requirements of the export trade.

The question of erecting a jetty at Micoud, which is the largest banana-producing area in the Colony, was taken up during the year, and it is hoped that shipping facilities will soon be provided, in view of the satisfactory transport of bananas by sea in sloops fitted with auxiliary motors. This convenience will also provide for the large coconut freight available in the same area and so relieve the main road system from the continuous depreciation brought about by the increased motor traffic.

Estimates of the crop for the season 1937 have been made at 150,000* bunches. One-fourth of this crop is anticipated during the drier weather from January to May, the remaining three-fourths being estimated as available during the wetter months, particularly in August to November. It is hoped that transport conditions will have improved by that time.

*Cost of production.*

Representative estimates of costs and returns on cultivation from growers of bananas in newly cleared land and in cacao land, were obtained for discussion of a revision of the price rate during the year. These are briefly indicated below:—

* Re-estimated on 12.2.37 at 100,000 to 120,000 bunches.

| Forest Land (per acre). | | | | | | Cacao Land (per acre). | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultivation for 1st year (from forest) | £8 | 0 | 0 | | | Cultivation (including cutting and heading) | £15 | 12 | 5 | | |
| Reaping and heading (3*d.* per count bunch) | 2 | 10 | 0 | | | Transport (trucking) | 3 | 6 | 3 | | |
| Trucking 300 stems | 6 | 5 | 0 | | | *300 stems = 219* counts at 2/1* | | | | £22 | 16 3 |
| Buyers Commission | | 16 | 8 | | | | | | | | |
| *300 stems = 200* counts at 2/1* | | | | £20 | 16 8 | | | | | | |
| | £17 | 11 | 8 | £20 | 16 8 | | £18 | 18 | 8 | £22 | 16 3 |
| Net to Grower | £3 | 5 | 0 | | | Net to Grower | £3 | 17 | 7 | | |

* Restated on 12.2.37 to be 125 counts per acre.

From the initial heavy cost of planting and weeding, together with the large proportions of rejects from transport conditions etc., the profit on this crop has not been as high as it should have been. Endeavours have therefore been made to open the way to a revision of the rate per count bunch, in order to more rapidly increase production to a point where heavier shipments will spread the overhead charges and freight proportionately and put the trade on a more profitable footing.

In this connection the publication in the press of the sliding scale proposed for the Jamaica trade has aroused interest.

*Export Facilities.*

Shipping conditions on the wharf at Castries have become increasingly difficult with the growth of the trade, and permission was obtained to purchase and erect a fruit shed under funds provided for the Government Marketing Depot. The shed has a capacity of some 5,000 bunches and has proved of great benefit. It has been provisionally rented at a nominal rate to the St. Lucia Banana Association.

The comparative total export of bananas for the five year period is given below :—

| | bunches. | £ |
|---|---|---|
| 1932 ... ... | 3,149 | 183 |
| 1933 ... ... | 22,258 | 1,626 |
| 1934 ... ... | 18,377 | 1,499 |
| 1935 ... ... | 60,439 | 5,209 |
| 1936 ... .. | 108,633 | 8,910 |

*Disease conditions in the Industry.*

The work on Panama Disease is reported under Section II.

2. (b) Minor Agricultural Industries.

I. THE FRESH FRUIT TRADE.

The production of fresh fruit for export was maintained during the year, and the total exports amounted to a value of £4,133 as compared with £4,157 in the previous year. The following schedule shows the position of this trade during the past five years, exclusive of bananas and limes which are now shewn under the principal industries.

| | | 1932. | | 1933. | | 1934. | |
|---|---|---|---|---|---|---|---|
| | | Amount. | Value £ | Amount. | Value £ | Amount. | Value £ |
| Grapefruit | crates ... | 108 | 28 | 43 | 13 | 32 | 13 |
| Oranges | ,, ... | 598 | 206 | 503 | 141 | 374 | 92 |
| Mangoes | ,, ... | 7,754 | 1,655 | 7,490 | 1,212 | 7,881 | 1,372 |
| Avocado Pears | ,, ... | 4,768 | 977 | 3,144 | 610 | 2,245 | 389 |
| Pineapples | ,, ... | 206 | 96 | 106 | 31 | 36 | 16 |
| Miscellaneous | ... | ... | 1,463 | ... | 2,003 | .... | 1,917 |
| Total | ... ... | 13,434 | 4,440 | 11,271 | 4,010 | 10,568 | 3,799 |

| | | 1935. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Amount. | | | | | | Value £ |
| | | Canada. | Bermuda. | U.K. | U.S.A. | Other places. | Total. | |
| Grapefruit | crates ... | 71 | 45 | 1 | ... | 5 | 122 | 35 |
| Oranges | ,, ... | 12 | 118 | ... | ... | 161 | 291 | 91 |
| Mangoes | ,, ... | 334 | 3,372 | 465 | ... | 2,385 | 6,556 | 1,567 |
| Avocado Pears | ,, ... | 2 | 3,850 | 1 | 2 | 2 | 3,857 | 709 |
| Pineapples | ,, ... | ... | 13 | ... | ... | ... | 13 | 3 |
| Miscellaneous | ,, ... | ... | ... | ... | ... | ... | ... | 1,752 |
| Total | ... ... | 419 | 7,398 | 467 | 2 | 2,553 | 10,839 | 4,157 |

| | | 1936. | | | | | |
|---|---|---|---|---|---|---|---|
| | | Amount. | | | | | Value £ |
| | | Canada. | Bermuda. | U.K. | Other places. | Total. | |
| Grapefruit | crates ... | 223 | 57 | 1 | 4 | 285 | 84 |
| Oranges | ,, ... | 9 | 28 | ... | 89 | 126 | 30 |
| Mangoes | ,, ... | 455 | 2,952 | 633 | 4,006 | 8,046 | 1,619 |
| Avocado Pears | ,, ... | 14 | 3,320 | ... | 2 | 3,336 | 504 |
| Pineapples | ,, ... | ... | 13 | ... | 4 | 17 | 2 |
| Miscellaneous | ,, ... | 2 | 7 | ... | 6,749 | 6,758 | 1,894 |
| Total | ... ... | 703 | 6,377 | 634 | 10,854 | 18,568 | 4,133 |

Further details of the trade demand, and of experimental work conducted on shipments of fruit, are included in the report on the work of the Government Marketing Depot appended to this report.

*Grapefruit.* The following price notes indicate the movements of the British West Indian Grapefruit market in the United Kingdom during the year :—

GRAPEFRUIT—per case in shillings.

| | Jan. | Feb. | Mch. | Apl. | May. | June — Sept. | | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|
| | *s.* | *s.* | *s.* | *s.* | *s.* | *s.* | *s.* | *s.* | *s.* | *s.* |
| British Honduras—seedless ... | ... | 12–24 | ... | ... | ... | 25 | ... | 18–21 | 10–20 | ... |
| Trinidad—seedless | ... | 9–11 | 14–16 | 14–21 | 14–20 | 16–22 | ... | 14 | 12 | 15–16 |
| Jamaica—seeded, mixed, etc. ... | 8–10 | 8–10 | 10–13 | 12–16 | 12–20 | 16–20 | 9–11 | 8–10 | 5–11 | 9–12 |
| Market demand ... | Poor. | Imprvd. | Steady. | Rising. | Firm for "Seedless" | — | Slow. | Fair. | Poor. | Fair. |

## II. FOREST PRODUCTS; FOREST CONSERVATION

This industry has not achieved any marked increase in the production of the various classes of forest materials shipped during the year, and the total value of exported products amounted to £3,998 as compared with £4,385 in the previous year. The various classes of products, as shewn in the table below, are derived from estate land, escheated Crown forest land sold for development in crops and pasture, and, it is to be feared, from land occupied and deforested by squatters.

Certain improvements in the fuel industry have been suggested by the visiting Chief Conservator of forests (Madras) Mr. A. Wimbush, whose report is dealt with more fully below. Mr. Wimbush appreciated that there existed a fair amount of dry fuel forest which could be worked without damage to the water and forest conservation requirements of the Colony. These fuel lands lie principally on low hills around the Castries, Gros Islet, and northern lowlands fronting the sea, and in the windward lowlands in dry forest. It was considered that the present system of cutting over such dry forest every five years or so would result in a rapid depreciation of growth conditions due to exposure and wash, and that at least some twenty years rotation should be given to the respective blocks of cut-over growth, by dividing the total area into coupes, only one of which should be taken each year.

A suggestion was further made that the dry forest lands around Castries held by the War Department might with advantage be converted to a reserved area under the local Government and be profitably worked for fuel and lumber production.

PRINCIPAL EXPORTS OF FOREST PRODUCE 1932—1935.

| | Boards cub. ft. | | Cedar cub. ft. | | Firewood cub. ft. | | Hardwood cub. ft. | | Logwood tons | | Furniture | Brooms doz. | | Charcoal bags | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Amt. | £ | Amt | £ | Amt. | £ | Amt. | £ | Amt. | £ | £ | Amt. | £ | Amt. | £ |
| 1932 | 975 | 70 | 28 | 1 | 108,160 | 338 | 2,493 | 227 | ... | ... | 691 | 1,381 | 53 | 79,960 | 4,042 |
| 1933 | 1,871 | 151 | ... | ... | 101,504 | 290 | 3,116 | 248 | 10 | 25 | 333 | 952 | 35 | 85,840 | 4,327 |
| 1934 | 2,008 | 158 | 103 | 8 | 79.104 | 196 | 4,008 | 242 | 67 | 98 | 147 | 1,052 | 35 | 89,840 | 4,486 |
| 1935 | 1,639 | 140 | 50 | 5 | 92,032 | 234 | 2,900 | 236 | 20 | 50 | 212 | 855 | 28 | 73,349 | 3,667 |
| 1936 | 2,317 | 223 | 10 | 1 | 90,368 | 228 | 2,414 | 135 | 42 | 70 | 50 | 939 | 26 | 67,594 | 3,265 |
| Average of 15 yrs. | 989 | 81 | 136 | 16 | 155,249 | 729 | 1,581 | 114 | 574 | 1,683 | 150 | 1,128 | 44 | 47,756 | 2,553 |

*Forest Conservation.*

The much-debated question of Forestry, Crown Lands, and Water Conservation, was carried a step further by the reception of the report of Mr. A. Wimbush. *

The report commented adversely on the proposal to develop settlement in the Murray Road area, and made suggestions for the provision of a separate Forestry service, and the reservation of suitable areas as permanent Protection Forests. Partly as a result of these recommendations, some revision of the Murray Road Settlement Scheme has been considered in order to co-ordinate the scheme with the forestry requirements, and at the same time to deal with the problem of squatting in a practical manner. The solution of this problem must have regard to the agitation for more and better agricultural land than is at present available to the small-holder, developed under adequate organised control, and to conversion of the remainder of Crown Lands into a closed and permanent Forestry Reserve, for the protection of the water supplies of the Island.

The Department is now responsible for approving any further sales of such lands in forests, in itself a very arduous task involving frequent personal inspection and some conflict with traditional ideas as to the use of forest land, and as a result of this measure of control, the allotments of lands have been very drastically reduced pending the organisation of a forestry service which is proposed for the year 1937.

## III. LIVESTOCK AND FARM ANIMALS.

There is nothing of note to record in the livestock industry in regard to export trade, only a few animals and a small quantity of hides and skins being shipped from the Colony each year. The livestock industry is however of importance in the internal activities of the Colony, and the production of meat and milk for local sale, and the manufacture of pen-manure for agricultural crops, forms part of estate routine in pastoral areas.

The culling of scrub animals for conversion to meat has received attention on some farms, and interest in an improved milk supply is being aroused. The Public Health Ordinance No. 17 of 1931 provides for the registration of pens, dairies, milk sellers, etc., and the testing of milk for adulteration and bacteriological contamination, under rules enacted in 1935.

There was no need for a special visit of the Government Veterinary Surgeon during the year. A visit is therefore in prospect for 1937.

* Printed by the Government Printery, Government Printing Office, Port-of-Spain, 1936.

*Government Farm—Union Station.*

Funds were provided for the purchase of a "Sussex" Bull during the year, and a suitable bull calf was shipped from England in November, arrangements being made to have the animal inoculated for immunity to Tick Fever by suitable treatment at the Government Stock Farm, Trinidad. Should the development of this animal be satisfactory, it is proposed to tour him for grading-up in such herds as are suitable for producing beef for local consumption.

Services of the breeding animals were satisfactory during the year, and the following returns were made :—

| | Jack | Pure Bred Holstein | ¾ bred Holstein Zebu | Large Black Boar | Berkshire Boar |
|---|---|---|---|---|---|
| Station Services | 27 | 5 | 20 | 16 | 2 |
| No. of tours ... | 5 | 3 | ... | 1 | ... |

Twenty-two pigs (17 Large Black and 5 Berkshire) were bred and sold from the Station at 10/- per head during 1936.

Unfortunate losses in the newly-introduced sheep and goat occurred during the year; the British-Alpine buckling did not thrive at the Station and although a change of diet was given and treatment for worms was made, he remained in indifferent condition and subsequently died. Post-mortem examination was carried out with the kind assistance of a Medical Officer, but this did not determine the cause of collapse. The loss of one half-bred lamb and one introduced Trinidad sheep was determined to be due respectively to stomach weakness, and to accidental choking when tied out at stake. The remaining half-bred lamb and imported sheep have improved in condition and appear to have acclimatised satisfactorily.

# COMPARATIVE SCHEDULE OF AGRICULTURAL PRODUCTS

| | | 1932. | | | 1933. | | |
|---|---|---|---|---|---|---|---|
| | | Quantities. | Value. £ | £ | Quantities. | Value. £ | £ |
| SUGAR PRODUCTS: | | | | | | | |
| Sugar, Vacuum Pan | tons ... | 4,990 | 46,466 | | 4,940 | 46,493 | |
| Molasses & Syrup | galls. ... | 32,988 | 1,453 | 47,919 | 43,260 | 1,417 | 47,910 |
| LIME PRODUCTS: | | | | | | | |
| Concentrated Lime Juice | galls. ... | 7,280 | 78 | | 16,208 | 860 | |
| Raw Lime Juice | ,, ... | 4,069 | 152 | | 591 | 40 | |
| Distilled Lime Oil | lb. ... | 10,345 | 11,662 | | 8,056 | 7,412 | |
| Essential H.P. Otto of Limes | lb. ... | 1,989 | 3,337 | | 2,582 | 3,021 | |
| Green Limes | brls. ... | 3,782 | 5,552 | 20,781 | 3,758 | 4,445 | 15,778 |
| COCONUT PRODUCTS: | | | | | | | |
| Coconuts | No. ... | 650,240 | 2,430 | | 1,199,808 | 3,527 | |
| Copra | tons ... | 432 | 5,389 | 7,819 | 542 | 5,167 | 8,694 |
| CACAO PRODUCTS: | | | | | | | |
| Cac o | cwt. ... | 8,188 | 9,091 | 9,091 | 6,056 | 6,778 | 6,778 |
| BANANAS | bchs. ... | 3,149 | 183 | 183 | 22,258 | 1,626 | 1,626 |
| FOREST PRODUCTS: | | | | | | | |
| Boards (native) | c. ft. ... | 1,009 | 73 | | 1,871 | 151 | |
| Cedar | ,, ... | 34 | 1 | | ... | ... | |
| Firewood | cords ... | 845 | 338 | | 793 | 290 | |
| Logwood | tons ... | ... | ... | | 10 | 25 | |
| Hardwood | c. ft. ... | 2,430 | 222 | | 3,116 | 248 | |
| Brooms | doz. ... | 1,384 | 4,053 | | 952 | 35 | |
| Charcoal | bags. ... | 79,960 | 4,042 | | 85,840 | 4,327 | |
| Furniture (Household) | ... | ... | 685 | | ... | 333 | |
| Miscellaneous | ... | ... | 1 | 5,415 | ... | ... | 5,409 |
| FRESH FRUIT & PRODUCTS: | | | | | | | |
| Mangoes | crates ... | ... | 1,655 | | 7,490 | 1,212 | |
| Oranges | ,, ... | 580 | 206 | | 503 | 141 | |
| Grapefruit | ,, ... | ... | 43 | | 28 | 13 | |
| Pineapples | ,, ... | ... | 96 | | 106 | 31 | |
| Avocado Pears | ,, ... | ... | 977 | | 3,144 | 610 | |
| Mixed Fruit | ... | ... | 1,463 | | ... | 2,003 | |
| Preserved Fruits | ... | ... | ... | | ... | 117 | |
| Jams, Jellies, etc. | ... | ... | 133 | | ... | 43 | |
| Miscellaneous | ... | ... | ... | 4,573 | ... | ... | 4,170 |
| SPICES: | | | | | | | |
| Nutmegs | lb. ... | 5,872 | 79 | | 6,834 | 80 | |
| Mace | ,, ... | 1,064 | 48 | | 1,326 | 58 | |
| Kola Nuts | ,, ... | 17,389 | 110 | | 13,760 | 108 | |
| Miscellaneous | ,, ... | 2,623 | 29 | 266 | 2,347 | 22 | 268 |
| LIVE STOCK & PRODUCTS: | | | | | | | |
| Hides & Skins | No. ... | 1,668 | 126 | | 2,240 | 122 | |
| Shells & Turtles | lb. ... | 401 | 114 | | 105 | 22 | |
| Fish Oil | galls. ... | ... | ... | | ... | | |
| Horses | No. ... | 21 | 85 | | 63 | 288 | |
| Asses | ,, ... | 3 | 5 | | 5 | 11 | |
| Mules | ,, ... | 7 | 28 | 358 | 23 | 126 | 569 |
| HONEY PRODUCTS: | | | | | | | |
| Honey | lb. ... | 46,393 | 331 | | 34,826 | 373 | |
| Beeswax | ,, ... | 392 | 12 | 343 | 206 | 5 | 378 |
| BAY PRODUCTS: | | | | | | | |
| Bay Oil | galls. ... | 44 | 100 | | 20 | 32 | |
| Bay Rum | ,, ... | 1,428 | 276 | 376 | 1,827 | 398 | 430 |
| VEGETABLE PRODUCTS: | | | | | | | |
| Plantains | bchs. ... | 203 | 16 | | 341 | 22 | |
| Farine | lb. ... | 14,642 | 99 | | 12,530 | 61 | |
| Yams | ,, ... | ... | 36 | | ... | 25 | |
| Miscellaneous | ... | ... | 416 | 567 | ... | 214 | 322 |
| MISCELLANEOUS PRODUCTS: | | 194 | 194 | 194 | ... | 275 | 275 |
| Total Exports | ... | | | 97,885 | | | 92,607 |

## AND BY-PRODUCTS EXPORTED FROM ST. LUCIA, 1932—1936.

| 1934. | | | 1935. | | | 1936. | | |
|---|---|---|---|---|---|---|---|---|
| Quantities. | Value. £ | £ | Quantities. | Value. £ | £ | Quantities. | Value. £ | £ |
| 4,730 | 39,396 | | 6,080 | 48,377 | | 7,707 | 60,358 | |
| 23,080 | 1,431 | 40,827 | 168,903 | 2,401 | 50,778 | 107,128 | 1,132 | 61,490 |
| 3,371 | 228 | | 1,080 | 45 | | 3,317 | 160 | |
| 10,525 | 471 | | 29,613 | 854 | | 34,171 | 1,405 | |
| 13,406 | 12,275 | | 10,264 | 9,673 | | 5,463 | 6,091 | |
| 1,251 | 1,868 | | 1,504 | 2,517 | | 810 | 1,047 | |
| 6,001 | 7,010 | 21,852 | 6,619 | 8,085 | 21,124 | 5,731 | 6,977 | 15,680 |
| 2,616,175 | 7,298 | | 2,814,965 | 7,632 | | 3,409,621 | 9,608 | |
| 302 | 2,592 | 9,890 | 215 | 1,871 | 9,503 | 306 | 3,561 | 13,169 |
| 6,349 | 6,032 | 6,032 | 627,809 | 6,042 | 6,042 | 6,538 | 9,627 | 9,627 |
| 18,377 | 1,499 | 1,499 | 60,439 | 5,209 | 5,209 | 108,633 | 8,910 | 8,910 |
| 2,008 | 158 | | 1,639 | 3 | | 2,317 | 223 | |
| 103 | 8 | | 50 | 3 | | 10 | 1 | |
| 618 | 196 | | 719 | 234 | | 706 | 228 | |
| 67 | 98 | | 20 | 50 | | 42 | 70 | |
| 4,008 | 242 | | 27,168 | 182 | | 2,414 | 135 | |
| 1,052 | 35 | | 855 | 28 | | 939 | 26 | |
| 89,238 | 4,486 | | 73,349 | 3,667 | | 67,594 | 3,265 | |
| ... | 147 | | 27 | 218 | | ... | 50 | |
| . | ... | 5,370 | ... | ... | 4,385 | ... | 81 | 4,079 |
| 7,881 | 1,372 | | 6,556 | 1,567 | | 8,046 | 1,619 | |
| 374 | 92 | | 291 | 91 | | 126 | 30 | |
| 32 | 13 | | 122 | 35 | | 285 | 84 | |
| 36 | 16 | | ... | 3 | | 17 | 2 | |
| 2,245 | 389 | | 3,857 | 709 | | 3,336 | 504 | |
| ... | 1,917 | | 5,496 | 1,699 | | 6,749 | 1,891 | |
| | 38 | | 2,318 | 53 | | ... | 54 | |
| . | 47 | | ... | ... | | ... | 51 | |
| .. | 3 | 3,887 | ... | ... | 4,157 | ... | 16 | 4,251 |
| 8,272 | 102 | | 4,736 | 63 | | 10,509 | 134 | |
| 1,062 | 51 | | 1,032 | 44 | | 1,913 | 72 | |
| 15,688 | ... 121 | | 11,776 | 106 | | 11,155 | 70 | |
| 95 | 2 | 276 | ... | 62 | 275 | 2,037 | 39 | 315 |
| 1,301 | 97 | | 2,879 | 145 | | 4,329 | 132 | |
| ... | 141 | | 357 | 67 | | ... | 134 | |
| | ... | | | | | 7 | 2 | |
| 85 | 369 | | 35 | 180 | | 34 | 136 | |
| 22 | 6 | | ... | ... | | 3 | 9 | |
| 22 | 134 | 747 | 12 | 70 | 462 | 9 | 35 | 448 |
| 43,051 | 424 | | 44,357 | 415 | | 65,290 | 609 | |
| 168 | 10 | 434 | ... | 13 | 428 | 239 | 19 | 628 |
| 2 | 8 | | 9 | 4 | | | | |
| 1,424 | 301 | 309 | 1,168 | 243 | 247 | 1,136 | 227 | 227 |
| 208 | 14 | | 512 | 38 | | 965 | 63 | |
| 22,202 | 113 | | 13,128 | 66 | | 17,039 | 103 | |
| ... | 7 | | ... | 4 | | ... | 6 | |
| .. | 105 | 239 | ... | 14 | 122 | ... | 565 | 737 |
| .. | 317 | 317 | ... | 500 | 500 | ... | 797 | 797 |
| | | 91,679 | | | 103,232 | | | 120,358 |

IMPORTED AGRICULTURAL PRODUCTS.

Attention is again drawn to certain imported articles of food which could to some extent be raised locally :—

| | Amount. | Value. |
|---|---|---|
| | | £ |
| Butter lb. ... ... | 51,593 | 2,751 |
| Butter substitutes lb. ... | 107,932 | 2,265 |
| Coffee lb. ... ... | 63,071 | 890 |
| Fish lb. ... ... | 768,247 | 6,576 |
| Rice cwt. ... ... | 575,368 | 2,320 |
| Meat lb. ... ... | 37,312 | 726 |

## SECTION II. WORK OF THE DEPARTMENT OF AGRICULTURE.

### 1. Work in the Botanic Gardens.

In addition to the usual routine work, progress has been made in executing improvements of a more permanent nature. Concreting of drains has been continued as opportunity offered, and a total of 359 ft. of concrete has been made in the walks and main drive. The main drive has been further improved by metalling and rolling.

There were no serious setbacks from weather vagaries during the year. The low-lying position of the Gardens and consequent high water-table minimised the effects of the early dry months; on the other hand, some flooding occurred during the heavy rains in early November, when 5.55" were registered in 24 hours (November 2nd) but owing to the improved drainage there were no serious results.

The usual propagation work on ornamentals and economic trees has been continued, and increased use has been made of this service by the public. An additional feature of recent years has been the upkeep of certain public and private grounds in Castries on a contract basis, as a means of providing employment and training men as gardeners. This will normally come to an end as these men become efficient.

The renovated Meteorological Station has continued to function efficiently and other improvements to the Gardens during the year have made this resort popular with the public, and for the several fêtes and shows which have been held there for various charitable causes. Towards the end of the year, the Castries Town Board was again invited by Government to take over the management of the Gardens, and it is expected that this transfer will be completed in the coming year. It is hoped, however, that the property will still remain both useful and ornamental, in its incorporation as a recreation centre in the town-planning scheme of Castries.

*Plant and Seed Introduction.* Supplies of the following seeds and plants were imported for the use of the Department :—Swamp grasses and other seeds from the Department of Agriculture, British Guiana; Kapok seeds — three varieties—from New Guinea; Sugar-cane cuttings from Trinidad; and ornamental plants and seeds from the United States. The usual supplies of vegetable seeds were imported and retailed.

*Fumigatorium Work.* Consignments to the total of 130 passed through the fumigatorium or were otherwise treated, under the Plant Quarantine Regulations (cf. page 58) and six consignments, consisting of plants in soil and diseased fruit, were destroyed. Strict supervision and the fullest co-operation of the public is necessary to make this work effective.

*Plant Propagation.* Ornamental plants and forest trees to the number of 1,925 and 120 respectively, were distributed from the Gardens during the year.

## 2. The Work of the Experiment Station, Union.

### I. GENERAL OBSERVATIONS ON THE ECONOMIC CROPS.

#### Grapefruit.

*Orchard Plots.* The Marsh and Duncan varieties imported from Florida in 1928 have continued to make satisfactory growth and carried a good crop, but their growth rate remains somewhat inferior to that of the locally budded tree. Reference was made in the Report for 1934 to the different periods of bearing of the two varieties, but this was not observable during the present year, and both varieties flowered and fruited concurrently; towards the end of November ripe fruit of each variety could be picked.

*Selection Plots.* The Marsh Seedless trees budded from estate selections have grown well, and efforts to keep these trees in the best of condition have been generally successful. A fair crop was being carried in December although there is much variation in the cropping habit, and it will be interesting to observe to what extent this is related to the clonal type derived from the respective parent trees. The continuous air currents from the hillside immediately behind the section have had a noticeable effect on the shaping of the trees, and a windbreak has been planted to remedy this.

Irrigation has been very beneficial in this section, and throughout the dry season the trees remained in full vigour. Towards the end of the year the trees were treated with lead arsenate for the control of Citrus Weevil. This treatment is referred to under Section II, 3. V. (b) of this Report.

*General.* *Indigofera endecaphylla* was planted in both plots, and was extended as rapidly as possible to form a permanent ground cover. Stools of the I.C.2., Giant Cavendish, and Gros Michel bananas were maintained as an intercrop and all made good growth, and several bunches were reaped. Beds of sour-orange stocks planted in 1935 for budding were maintained, and the budded plants were distributed during the year. The drainage system was satisfactory.

*Manures, etc.* Artificial manures were applied as in 1935, but no lime was given. Mulching with lemon grass (*Andropogon citratus*) was practised during the dry season.

#### Oranges.

*Orchard Plots.* Good growth was made throughout the year, and the crop was satisfactory, an increase over that of 1935 being noticed.

*Orchard Section.* The Ruby variety reported last year as unsatisfactory, responded to irrigation during the dry season, and in general the trees made uniformly good growth. Flowering was very heavy and all the varieties set a crop of fruit. Rust-Mite damage was noticeable on orange fruit to a slight extent, and spraying with 3 per cent. Sulphemulsol at fortnightly intervals in the early stages of the fruit proved a successful control.

*General.* *Indigofera endecaphylla* was maintained and extended as a soil cover, and *Tephrosia Candida* was also grown. The beds between the orchard rows were sown with *Coffea robusta*.

#### Budded Limes.

*Orchard Plots.* The Lime die-back noticed in 1935 has continued, and the trees suffered particularly during the dry weather from the effects of root destruction by Citrus Weevil, as no irrigation was practicable. The lime hybrid T1 bore fruit throughout the year.

*Orchard Section.* The Tahiti and Woglum varieties were similarly affected, although both bore moderate crops.

Lemons.

*Orchard Plots.* The trees have made fair growth and carried a moderate crop. Some reinfestation by Johnson grass was observed in this plot and a special effort was made to eradicate it.

Mangoes.

*Orchard Section.* All the trees made heavy growth and all bore fruit with the exception of "Ennuna" and "Dora barbadensis". The crop was disappointing however, and it is possible that this was due to immature wood. The fruit was sold locally, and for export through the Government Marketing Depot.

Avocados.

*Orchard Section.* The trees in this plot have made fair growth, but have not yet carried a good crop. Some of the varieties have been re-established in a new site, and other selections have been put out in the country nurseries where conditions are more suitable.

Coconuts.

*Dwarf Varieties.* The three dwarf varieties are now bearing heavily and there is a good demand for the nuts for planting. One tree was affected by a bud-rot and was cut down and burnt.

*General.* Special efforts to get rid of the pernicious Johnson grass were made in this plot. The plot has been heavily mulched with banana trash to reduce weed growth and it is to be forked, drained, and limed in 1937.

Sugar Cane Variety Plot.

The following varieties were grown during the year:—

| | | | | | |
|---|---|---|---|---|---|
| B.H. 10 (12) | B. 374 | B. 726 | B. 2935 | M. 7 | P.O.J. 2714 |
| B. 67 | B. 381 | B. 472 | B. 4507 | M. 42 | P.O.J. 2725 |
| B. 156 | B. 409 | B. 891 | B. 6388 | Sc. 12/4 | P.O.J. 2727 |
| B. 208 | B. 417 | Ba. 11569 | M. 3 | C.O. 213 | P.O.J. 2878 |

These varieties were all cut during the crop season and the cane disposed of for syrup manufacture. There was a small demand for plants, and 'seed' lots of some 400 plants of B. 2935 were distributed to peasants in the Choiseul and Soufrière districts.

During the year further varieties were received from the Plant Quarantine Station in Trinidad. These comprised:—B. 3216, B. 3125, New Guinea 24, B. 2935, B. 3127, B. 3334, B. 2977, B. 2931, Kavangire, B. 3138, Merthi, Fiji, B. 3124, M. 62, C.O. 290, Oshima, M. 42, D. 66/30, P.O.J. 2883, Groen Duitsch, N.G., C.P. 807, Uba—Naquin and India, Kassoer, B. 3439, B. 3179, C.H. 64/21, D. 49/30, B. 3011, B. 3013, D. 11/28, P.R. 803, N.G. 25, M. 28.

As a number of these varieties are not needed for further work, the promising ones only will be retained for distribution as crop canes, peasant canes, or "fodder canes" respectively.

## II. THE PLANT NURSERIES.

The Department maintained six nurseries during the year for the supply of planting material for the Colony, at the following places:—Union Station Castries—general crops; Rabot Nursery, Soufrière,—citrus and coffee; Dennery Nursery—citrus and coffee; Barre de l'Isle, Cul-de-Sac—bananas, coffee, citrus, cacao selections; Botanic Gardens, Castries—miscellaneous and ornamental; Murray Road Nursery—bananas, citrus, coffee and upland crops for work under the Land Settlement Scheme.

The majority of the supplies were transported free of charge, and the total material distributed for the year is shewn below, comparatively :—

PLANTS, SEEDS, AND CUTTINGS DISTRIBUTED BY THE AGRICULTURAL DEPARTMENT DURING THE FIVE-YEAR PERIOD, 1932—1936.

| | 1932 | 1933 | 1934 | 1935 | 1936 |
|---|---|---|---|---|---|
| Lime Seedlings | 13,725 | 6,700 | 1,575 | ... | ... |
| Budded & grafted limes | 2,019 | 3,382 | 8,202 | 6,454 | 8,648 |
| Sour-orange seedlings * | 3,200 | 700 | 100 | 1,548 | ... |
| Budded oranges | 596 | 1,621 | 2,407 | 1,651 | 647 |
| Budded Grapefruit | 1,489 | 8,508 | 2,510 | 1,261 | 554 |
| Budded Lemons | 67 | 361 | 53 | 50 | 25 |
| Grafted mangoes | 69 | 88 | 14 | 53 | 7 |
| Grafted advocados | 22 | 40 | ... | 39 | 16 |
| Pineapple plants | 1,788 | 942 | ... | ... | 62 |
| Coffee, Robusta | 140 | 4,690 | 4,374 | 4,540 | 16,493 |
| Coconut plants | 6 | 6 | ... | ... | ... |
| Dwarf Coconuts | 12 | 76 | 42 | 112 | 117 |
| Claret nuts | 11 | ... | ... | ... | ... |
| Mango stocks | ... | 256 | 10 | ... | ... |
| Guava | ... | 4 | ... | ... | ... |
| Tonca Bean | ... | ... | ... | ... | 72 |
| Sapodilla | ... | 2 | ... | ... | ... |
| Papaw plants | ... | 12 | ... | ... | ... |
| Total Orchard Plants | 23,144 | 27,338 | 24,433 | 15,792 | 26,641 |
| Cane plants | 5,949 | 13,324 | 22,308 | 11,545 | 800 |
| Forest plants | 132 | 108 | 161 | 306 | 120 |
| Vegetable seedlings | 3,200 | 4,615 | 2,725 | ... | ... |
| Tanias | ... | 190 | ... | ... | ... |
| Dasheen | ... | 100 | 60 | ... | ... |
| Sweet potato cuttings | 6 | 14,202 | 35,200 | ... | ... |
| Potato yams | 3,352 | 4 | 5 | ... | ... |
| Plantain suckers | 141 | 95 | ... | 18 | ... |
| Bananas | 122 | 140 | 357 | 29,272 | 18,378 |
| Total Economic Plants | 33,046 | 60,166 | 85,249 | 56,933 | 45,939 |
| Corn (lb.) | ... | ... | ... | ... | 20 |
| Green-dressing seed (lb.) | 46 | 5 | 18 | 221 | 302½ |
| Cover crop cuttings (bundles) | ... | ... | ... | ... | 6 |
| Fodder plants & grasses | ... | 646 | ... | 17 | 203 |
| Pasture grasses | ... | 470 | 663 | 400 | 6 |
| Lemon grass (stools) | ... | 600 | 300 | 101 | 660 |
| Ornamental plants and cuttings | 486 | 443 | 1,471 | 1,242 | 1,925 |
| Hedge & fence sticks (bundles) | ... | 3 | 6 | ... | 12 |

* Mainly for Nursery work.

There was a distinct demand for dwarf nuts for planting in Barbados and elsewhere, and for orchard trees generally, and a number of orders from overseas could not be undertaken for lack of trained staff and inadequate notice. The rates charged for planting materials are now indicated in a schedule attached to this Report.

*Supplies and Nursery work for 1937.* There has been an unavoidable carryover of orders to 1937, owing to dry weather retarding the Nursery work, and some 36,000 sour orange stocks have to be provided for in the planting programme for the coming season.

## III. GOVERNMENT STOCK FARM.

This work is referred to under Section I. 2 (b). III—"LIVESTOCK AND FARM ANIMALS".

## 3. Research and Experimental Work.

### I. MANURIAL TRIALS ON BUDDED LIMES.

The experimental details of the manurial trials were given in full in the Report for 1935. Owing to the need for immediate trials of insecticides and protective measures against Citrus Weevil, this area was placed at the disposal of Mr. R. G. Fennah, M.A., A.I.C.T.A., F.R.E.S., for citrus weevil experiments during the year. In view of the various treatments that have been used, and root disturbance caused by the digging operations on some of the trees, the analyses of manurial trials will for the present remain in abeyance. Measurements of growth were taken in December, however, in order to provide a basis for the records of 1937.

Manures were applied as in 1935, the amounts given being 4 lb. Sulphate of Ammonia, 4 lb. Sulphate of Potash, and 6 lb. of Superphosphate applied to the respective trees in two equal doses during the year.

The growth of the trees was irregular, due to citrus root weevil attacks. A heavy flowering was observed at the beginning of the year, and a satisfactory crop was set. Withertip was present but did little damage even in the latter months of fairly high rainfall. Snow scale was prevalent, and spraying with Sulphemulsol (3 per cent.) had to be done regularly in order to exercise adequate control.

The total crop amounted to 124 barrels of limes, the crop from experiment trees only being 60 barrels. The cost of maintaining the experiment (inclusive of costs incurred on *Diaprepes* investigation) amounted to £41 2 7.

### II. WITHERTIP DISEASE TRIALS OF BUDDED LIMES.

Preliminary trials with irrigation were made on the "irrigation" plots, and shade trees were supplied where necessary. As the Immortelle shade trees are too small to have any effect, temporary shelter trees of Gliricidia are being grown on.

Citrus fertiliser and Sulphate of Ammonia were applied to the lime trees, and a crop of 18 barrels of limes was picked. The total cost of maintaining the experiment amounted to £23 13 4.

### III. DEMONSTRATION ORCHARDS.

The purpose of these orchards is to demonstrate the inexpensive development of one acre each of the recommended fruit trees, by intercropping with local food-crops such as are common on estates and small-holdings.

The cost of operations is tabulated and carried forward annually, and any receipts are recorded (see below). The catch-crops have now been removed to make room for the permanent trees.

The orchard trees were planted in 1931 in land redeveloped from abandoned cacao, and cover some four acres of land exclusive of roads, etc.

#### Plot I. Orange.

*Varieties.* Washington Navel, Parson Brown, Valencia Late and Temple Hybrid.

The growth of these trees has been good and a small setting of fruit was made in March. There was a general flush of flowers early in June from which a crop was set, some of the trees carrying up to 450 fruits or more.

The fruit was of good quality though small, and regular spraying in the early stages with 3 per cent. Sulphemulsol successfully minimised the damage done by mites, and the fruit was remarkably clean.

Intercropping with dwarf bananas was continued, and *Indigofera endecaphylla*, planted in the plot at the end of 1935, has become well established and forms a valuable soil cover. Drains were kept open during the rainy season, and the trees were heavily mulched at the beginning of the dry season.

The following fertilisers were applied :—

2lb sulphate of ammonia and 1lb citrus fertiliser in June.
2 „ „ „ „ „ sulphate of potash in December.

Slight attacks of Snow and Purple scale insects during the dry season were controlled by spraying with 3 per cent. sulphemulsol.

### Plot II. Grapefruit.

*Varieties.* Marsh Seedless and Duncan.

The growth of the trees in this plot has been good and a satisfactory crop was set in June, one Marsh tree carrying 335 fruit. This crop appeared to be larger than that of 1935, and some of it ripened during the year. The bulk of the fruit will ripen in 1937. *Indigofera endecaphylla* has been readily established in this plot and is making excellent growth and exercising considerable control over weeds.

*Application of Fertilisers.* This was similar to that in the orange plot.

### Plot III. Avocados.

*Varieties.* Nimlioh, St. Anne, Fuerte, Government House seedling, Government Office seedling, and Galvana Green.

This plot consists of local selections and of imported varieties of avocados, with a view to gaining a better knowledge of growth requirements and shipping characteristics.

Two more trees in this plot succumbed to the unfavourable conditions described in the report for 1933. Otherwise progress has been good, although little fruit was set, and thus not enough was available for cold storage trials. These should take place in 1937.

Intercropping has been extended as much as possible, and the varieties have been propagated and planted on an upland site. A cover crop of lemon grass has been interplanted to assist in supplying mulch to the other plots of the demonstration orchard.

Each tree received 2lb citrus fertiliser in April, and 2lb sulphate of ammonia and 1lb sulphate of potash in December.

### Plot IV. Mangoes.

*Varieties.* Grafted Julie, Budded Julie, Mon Repos late, Ressource late, and Peach.

Planted in 1931, these trees have grown rapidly and have had to be opened by pruning. Each tree received a mixture of 3lb superphosphate and 2lb. sulphate of potash in November.

A fair crop was picked, the bulk being shipped to England by the Government Marketing Depot.

The plot has been cover-cropped with horsebeans.

## EXPENDITURE AND RECEIPTS ON THE DEMONSTRATION PLOTS, 1931—1936.

### Plot I, ORANGES. (72 trees—25 feet x 25 feet).

| Expenditure. | £ | s. | d. | Receipts. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| 1936 | | | | | | | |
| Cultivation ... ... | 7 | 10 | 0 | 3,758 Oranges ... ... | 9 | 10 | 4 |
| Fertilisers and insecticides ... | | 19 | 0 | 43 bunches Bananas ... | | 10 | 9 |
| | 8 | 9 | 0 | | 10 | 1 | 1 |
| 1935 Catch crops & Orchard trees ... | 10 | 6 | 0 | | 2 | 19 | 7 |
| 1934 ,, ,, ,, ... | 11 | 0 | 10 | | 4 | 11 | 5 |
| 1933 ,, ,, ,, ... | 14 | 8 | 8 | | 14 | 1 | 0 |
| 1932 ,, ,, ,, ... | 22 | 18 | 4 | | 5 | 12 | 3 |
| 1931 ,, ,, ,, ... | 12 | 3 | 10 | | 1 | 17 | 1 |
| Total Expenditure ... | 79 | 6 | 8 | Total Revenue ... | 39 | 2 | 5 |
| Per acre per annum ... | 13 | 4 | 5 | | | | |

### Plot II, GRAPEFRUIT. (72 trees - 25 feet x 25 feet).

| Expenditure. | £ | s. | d. | Receipts. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| 1936 | | | | | | | |
| Cultivation ... ... | 6 | 15 | 0 | 5,280 Grapefruit ... ... | 11 | 0 | 0 |
| Fertilisers and insecticides ... | 1 | 7 | 0 | 54 bunches Bananas ... | | 13 | 6 |
| | 8 | 2 | 0 | | 11 | 13 | 6 |
| 1935 Catch crops & Orchard trees ... | 10 | 0 | 2 | | 6 | 9 | 10 |
| 1934 ,, ,, ,, ... | 11 | 6 | 3 | | | 19 | 10 |
| 1933 ,, ,, ,, ... | 20 | 6 | 2 | | 4 | 13 | 4 |
| 1932 ,, ,, ,, ... | 18 | 11 | 7 | | 14 | 9 | 8 |
| 1931 ,, ,, ,, ... | 23 | 17 | 7 | | 10 | 5 | 8 |
| Total Expenditure ... | 92 | 3 | 9 | Total Revenue ... | 48 | 11 | 10 |
| Per acre per annum ... | 15 | 7 | 4 | | | | |

### Plot III, AVOCADO PEARS (48 trees—30 feet x 30 feet).

| Expenditure. | £ | s. | d. | Receipts. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| 1936 | | | | | | | |
| Cultivation ... ... | 4 | 5 | 0 | | | .. | |
| 1935 Catch crops & Orchard trees ... | 5 | 6 | 11 | | | ... | |
| 1934 ,, ,, ,, ... | 10 | 9 | 5 | | 1 | 2 | 8 |
| 1933 ,, ,, ,, ... | 17 | 5 | 8 | | 2 | 13 | 0 |
| 1932 ,, ,, ,, ... | 16 | 1 | 10 | | 9 | 6 | 9 |
| 1931 ,, ,, ,, ... | 14 | 13 | 9 | | 3 | 10 | 0 |
| Total Expenditure ... | 68 | 2 | 7 | Total Revenue ... | 16 | 12 | 5 |
| Per acre per annum .... | 11 | 7 | 1 | | | | |

**Plot IV, MANGOES. (48 trees—30 feet x 30 feet).**

| Expenditure. | | | | Receipts. | | | |
|---|---|---|---|---|---|---|---|
| 1936 | | | | | | | |
| | £ | s. | d. | | £ | s. | d. |
| Cultivation ... ... | 3 | 12 | 6 | 476 Mangoes ... ... | 1 | 9 | 9 |
| Fertilisers ... ... | | 6 | 0 | | | ... | |
| | 3 | 18 | 6 | | | | |
| 1935 Catch crops & Orchard trees ... | 4 | 15 | 6 | | 1 | 16 | 9 |
| 1934 ,, ,, ,, ... | 5 | 15 | 3 | | 1 | 0 | 6 |
| 1933 ,, ,, ,, ... | 6 | 10 | 5 | | 3 | 8 | 10 |
| 1932 ,, ,, ,, ... | 13 | 11 | 6 | | 9 | 0 | 0 |
| 1931 ,, ,, ,, ... | 10 | 18 | 1 | | 1 | 16 | 4 |
| Total Expenditure ... | 45 | 9 | 3 | Total Revenue ... | 18 | 12 | 2 |
| Per acre per annum ... | 7 | 11 | 7 | | | | |

### Extension Plot.

This plot continues to be used for new or useful economic trees which are being introduced for general planting purposes. The growth of all trees has been satisfactory and the complete list of trees is given below :—

| | |
|---|---|
| Grapefruit : | Marsh Pink and Foster's Pink. |
| Tangerine : | Dancy and King. |
| Orange : | Lue Gim Gong, Hamlin. |
| Avocado : | Trapp, Simmons and Butler. |
| Miscellaneous : | *Malpighia glabra* (Barbados Cherry). |
| | *Artocarpus integrifolia* (Jack Fruit). |

## IV. SUGAR CANE MANURIAL EXPERIMENTS.

### (i) Manurial Trials Reaped.

(a) *Roseau.*

The Manurial Experiment plots started at Mont D'Or Estate, Roseau, in 1932, and at Roseau Estate in 1931, were again reaped.

The following tables show the results obtained from these Experiments :—

#### Table I.

| | |
|---|---|
| *Station.* | Mont D'Or Estate, Roseau. |
| *Age of Cane.* | Third Ratoon. |
| *Plot size.* | 1/23 acre weighed. |
| *Soil.* | Alluvial Clay Loam. |
| *Variety.* | B.H. 10 (12). |
| *Treatments.* | A. 375lb. sulphate of ammonia + 200lb. sulphate of potash per acre. |
| | B. 150lb. sulphate of ammonia per acre. |
| | C. 300lb. ,, ,, ,, ,, ,, |
| | D. 450lb. ,, ,, ,, ,, ,, |
| | E. 600lb. ,, ,, ,, ,, ,, |
| *Plant Canes reaped* : | March, 1933. |
| *First Ratoons reaped* : | March, 1934. |
| *Second Ratoons reaped* : | March 27th, 1935. |
| *Manures applied* : | May 8th, 1935. |
| *Reaped as Third Ratoons* : | April 7th, 1936. |

*Summary of Results.*

| Treatments. | A. 375 lb. S/A. 200 lb. S/P. | B. 150 lb. S/A. | C. 300 lb. S/A. | D. 450 lb. S/A. | E. 600 lb. S/A. | Mean. |
|---|---|---|---|---|---|---|
| Tons cane per acre | 35.12 | 28.17 | 30.08 | 28.16 | 32.56 | 30.82 |
| Per cent. of Mean | 113.95 | 91.40 | 97.59 | 91.36 | 105.64 | 100.00 |

TABLE II.

*Station.* Roseau Estate.
*Age of Cane.* Second Ratoon.
*Plot area.* 1/23 acre weighed.
*Soil.* Alluvial Clay Loam.
*Variety.* B.H. 10 (12).
*Treatments.* As at Mont D'Or in Table I.
*Plant Canes reaped.* March, 1934.
*First Ratoons reaped.* March 28th, 1935.
*Manures applied.* May 9th, 1935.
*Reaped as Second Ratoons.* March 31st, 1936.

| Treatments. | A. 375 lb. S/A. 200 lb. S/P. | B. 150 lb. S/A. | C. 300 lb. S/A. | D. 450 lb. S/A. | E. 600 lb. S/A. | Mean. |
|---|---|---|---|---|---|---|
| Tons cane per acre | 36.61 | 35.13 | 34.86 | 33.18 | 32.38 | 34.43 |
| Per cent. of Mean | 106.33 | 102.03 | 101.24 | 96.36 | 94.04 | 100.00 |

REMARKS.

Once again there is no significance in these results, though Treatment "A" gives.....some indication that the application of potash is beneficial. Better results are hoped for from the plant-cane manurial experiments to be reaped in 1937—these experiments are more fully laid out and should yield some definite information.

(ii) MANURIAL TRIALS FOR REAPING IN 1937.

(a) *Roseau.*

These trials deal only with sulphate of potash and superphosphate. All the plots received the standard estate dressing of pen manure, sulphate of ammonia, ground limestone, etc.

The plots are arranged in three 4 × 4 Latin Squares and the treatments are as follows:—

A=Control.
B=2 cwt. sulphate of potash per acre.
C=1 cwt. superphosphate per acre.
D=2 cwt. sulphate of potash and 1 cwt. superphosphate per acre.

(b) *Dennery.*

The following treatments are included in this trial :—

A=Standard estate dressing.

B=1 cwt. sulphate of ammonia applied 1 month after planting.

2 „ „ „ „ „ 8-10 weeks after planting.

3 „ „ „ „ „ at the end of the following dry season (June-July).

C=Sulphate of ammonia as in (A) with 2 cwt. sulphate of potash.

D=Sulphate of ammonia „ „ (B) „ „ „ „ „

These plots are arranged in three 4 × 4 Latin Squares.

### (iii) Variety Trials for Reaping in 1937.

(a) *Vieux-Fort.*

The three varieties B.2935, S.C.12/4 and B.726 are being used in these trials to determine the suitability of these varieties for the calcareous drier type of soil in the plain of Vieux-Fort. The plots are arranged in four 3 × 3 Latin Squares.

## V. ENTOMOLOGICAL INVESTIGATIONS.

### (a) Sugar-cane Moth-borer (Diatraea spp.)

The thorough acclimatisation of the Amazon Fly (*Metagonistylum minense*) which was introduced in 1935, now appears to be assured in all the main sugar-cane areas, and the ready recovery of the puparia of the fly on cane-stalks augurs a satisfactory measure of control. The conspicuous adult flies can be found on grasses in most of the sugar-cane areas. The new parasitic fly has therefore succeeded in establishing itself to a much higher degree than was apparent with the *Lixophaga* fly, and a lower ratio of damaged canes, and a progressive improvement in purity of juice and sugar outturn is anticipated from this satisfactory issue.

Mr. H. E. Box, F.E.S., continued in charge of this work until he left the Colony in April, but it is anticipated that occasional visits will be paid to watch the progress of the biological control of moth-borers during the next two years.

### (b) Citrus Weevil (Diaprepes spp.)

As indicated elsewhere, this pest has seriously affected the trees in many of the lowland citrus fields, and ameliorative measures have been investigated pending a more conclusive form of control.

Mr. R. G. Fennah, B.A., Lecturer in Entomology, Imperial College of Tropical Agriculture, was appointed to take over the investigation from Mr. Box on behalf of the Advisory Department of Agriculture, and paid four visits of 24 days in all to this Colony in connection with this work. By utilising material brought together from previous investigations, and the results of original experiments laid down at Union Station, Mr. Fennah was able to suggest two forms of treatment by soil insecticides, offering a measure of control of the root weevil.

The most promising and inexpensive method, that of lead arsenate applied with air-slaked lime to the roots of the affected trees, was carried out by the Department on citrus trees at the Experiment Station, and facilities were provided to estates to lay down representative experimental plots in the affected areas. It is hoped that further observations on these plots and the results of other experiments in progress at the Experiment Station, will provide a practicable form of control within reach of the average citrus grower.

The full report of this work was given in two bulletins issued by the Imperial College of Tropical Agriculture during the year. ("Report on a visit to St. Lucia in connection with an attack on Citrus by Weevils of the genus *Diaprepes*" and "Report on a visit to St. Lucia in connection with an investigation into the methods of controlling Citrus Weevils (*Diaprepes spp.*)"—by R. G. Fennah, B.A., A.I.C.T.A., F.R.E.S., Lecturer in Entomology, Imperial College of Tropical Agriculture, Trinidad).

### (c) Coconut Pests.

Several instances have been recorded of the capture of the Rhinoceros beetle (*Stratægus sp.*) in the coconut areas. This beetle is of striking appearance, being of large size and dark colour, with a polished brilliance, the males having one or more horns projecting from the forepart of the body. In common with other large grubs, e.g. the larvae of the Black beetle *Rhynchophorus palmarum*, found in rotting trees, the larvae of this insect are known locally as the "Gru-Gru".

The thorough destruction of dead palm trunks, and precautions to prevent wounding of living palms, are measures advised for the control of this pest, and future reports of its occurrence would be of value in determining its status as a dangerous insect.

Cases of young palm trees infested with numerous small grubs have also been reported. This probably refers to larvae of the small palm-borer *Polyderces zonatus*, and adult insects have been hatched out from injured palms. This weevil was previously reported in the Annual Report—1930—p. 5, and its re-appearance, generally in young trees, is being noted for further investigation.

## VI. PLANT PATHOLOGY. FUNGOUS DISEASES.

### (a) *Panama Disease of Bananas.*

Inspection of the Banana plantations and work on Panama disease was continued throughout the year, the total number of plants examined being 432,367 in new and old gardens. Of these some 3,728 stools=(0.89 per cent.) were found diseased and were treated with gas oil. Certain areas in the Soufrière Canaries and Castries districts again shewed the greatest proportion of infected stools and banana production in these areas is not encouraged. The inspectors have again enjoyed the cordial co-operation of planter and peasant alike and no enforcement of measures under the Plants Protection Ordinance was found necessary. Of some 2,764 peasants' gardens inspected, a total of 828 were classed as infected i.e. 29.96 per cent. Both disease incidence and garden infections are slightly higher than last year, owing to the survey being carried into territory now more or less abandoned and not classified as banana land under present-day methods of cultivation. A detailed analysis of infected areas is given below: -

## The Distribution of Panama Disease in the Colony—Survey 1936.

*New Cultivations (up to 3 years.)*

| | No. of Gardens. | | | | No. of Stools. | | | |
|---|---|---|---|---|---|---|---|---|
| | Inspected. | Diseased. | Per cent. | | Inspected approx. | Diseased. | Per cent. | |
| | | | *1936* | *(1935)* | | | *1936* | *(1935)* |
| Castries ... | 182 | 74 | 40·7 | (31·7) | 51,460 | 390 | 0·8 | (0·4) |
| Dennery ... | 308 | 84 | 27·3 | (30·4) | 97,770 | 584 | 0·6 | (0·7) |
| Micoud ... | 300 | 58 | 19·3 | (18·1) | 67,950 | 227 | 0·3 | (0·2) |
| Laborie ... | ... | ... | ... | (22·7) | ... | ... | ... | (0·3) |
| Choiseul ... | ... | ... | ... | (17·9) | ... | ... | ... | (1·6) |
| Soufrière ... | 979 | 191 | 19·5 | (28·1) | 109,712 | 641 | 0·6 | (0·9) |
| Canaries ... | 44 | 26 | 59·1 | (47·1) | 6,640 | 85 | 1·3 | (1·2) |
| Anse-la-Raye ... | 70 | 34 | 48·6 | (15·2) | 11,425 | 159 | 1·4 | (0·4) |
| Gros Islet ... | 26 | 11 | 42·3 | (30·0) | 3,180 | 61 | 1·4 | (0·3) |
| | 1,909 | 478 | 25·0 | (27·3) | 348,137 | 2,147 | 0·62 | (0·65) |

*Old Cultivations (over 3 years).*

| | No. of Gardens. | | | | No. of Stools. | | | |
|---|---|---|---|---|---|---|---|---|
| | Inspected. | Diseased. | Per cent. | | Inspected. approx. | Diseased. | Per cent. | |
| | | | *1936* | *(1935)* | | | *1936* | *(1935)* |
| Castries ... | 50 | 25 | 50·0 | (34·5) | 6,390 | 107 | 1·7 | (1·0) |
| Dennery ... | 146 | 40 | 27·4 | (61·8) | 36,800 | 141 | ·4 | (1·2) |
| Micoud ... | 64 | 26 | 40·6 | (26·6) | 6,990 | 63 | ·9 | (0·4) |
| Laborie ... | ... | ... | ... | (41·4) | ... | ... | ... | (1·3) |
| Choiseul ... | ... | ... | ... | (41·6) | ... | ... | ... | (2·2) |
| Soufrière ... | 502 | 209* | 41·6 | (68·0) | 23,605 | 934 | 4·0* | (2·4) |
| Canaries ... | 49 | 30* | 61·2 | (71·4) | 4,660 | 270 | 5·8* | (2·4) |
| Anse-la-Raye ... | 30 | 15 | 50·0 | (32·4) | 3,875 | 48 | 1·2 | (2·0) |
| Gros Islet ... | 14 | 5 | 35·7 | (8·3) | 1,910 | 18 | ·9 | (0·2) |
| | 855 | 350 | 40·9 | (51·0) | 84,230 | 1,581 | 1·88 | (1·46) |

* Abandoned areas now brought under survey.

### VII. ANALYSES OF FOREST SOILS—MURRAY ROAD AREA.

The following notes on soils of the Murray Road area have been extracted from a detailed report † forwarded through the Advisory Department of

† "Report on soils of Murray Road Settlement Area; St. Lucia, B.W.I. (March—September, 1936)" by F. Hardy and G. Rodriguez (Analyst). (Imperial College of Tropical Agriculture, Trinidad, B.W.I.)

Agriculture from the Department of Chemistry, Imperial College of Tropical Agriculture, Trinidad. The work was undertaken in order to provide fuller knowledge of soil conditions prior to settlement. Samples with field notes were collected from representative locations by the local officers, following a procedure recommended by Professor Hardy, to whom the thanks of the Department are due for the extensive analyses undertaken and the comprehensive report made thereon :—

(a) *Organic matter content of the Soils of the Murray Road Settlement Area.* The organic matter contents of the surface soil samples vary from 27·0 to 1·5 per cent. Values greater than 3·0 per cent. may be regarded as relatively high for agricultural soils. The carbon-nitrogen ratio varies from 20 to about 11, which indicates that the organic matter in the soil is not completely decomposed. In two cases only is the ratio less than 10.0, indicating a fairly high degree of biochemical decomposition.

The organic matter contents of the subsoil samples (6-12 ins.) vary from about 9.0 to 1.0 per cent. Carbon-nitrogen ratio for subsoil samples is also generally greater than 10.0, indicating somewhat incomplete breakdown. The soils are evidently very deep and inherently rich in organic matter. The rate of loss of organic matter following agricultural utilisation cannot be guaged, except by soil analysis of samples periodically collected over a number of years.

(b) *Total-Nitrogen* contents are very high in the surface soils, but the data show extreme variability.

(c) *Soil Reaction* is generally only slightly acidic (pH values above 6.0), although none of the soils is alkaline or neutral. The highest recorded normal pH value is pH 6.6, and the lowest, pH 4.6 (No. 6) which is very highly acidic. More than half of the total number of samples gave normal pH values of 6.0 or over.

(d) The soils are mainly *sandy loams* although some may be classed as true loams or as silts. None of the soils would be classed as clay. Index of Texture values are greatly increased by the presence of organic matter, so that data for subsoils, containing least amounts of organic matter, should mainly be considered for assessing textural types. The texture generally appears to be ideal for productive humic soils.

(e) *The nutrient status* appears at present to be generally good but variable, although rate of solution values are not particularly high, indicating that the minerals of the soil are not easily weathered, or that the mineral material consists largely of inert quartz, or of excessively weathered, and leached alumino-silicates or secondary "clay minerals".

Contents of *available phosphate are generally relatively* low. This is perhaps the most distinctive chemical feature of the Murray Road Settlement soils. Values for available phosphate *less than* 50 parts per million may be regarded as inadequate for the growth of banana, citrus and most ground provision crops. None of the surface soil samples contain as much available phosphate as this, and the subsoil samples usually contain considerably less than 20 p.p.m.

*Available potash* contents are very variable, ranging from about 1,000 parts per million to 100 or less. Values greater than 100 p.p.m. may be regarded as adequate for most tropical crops grown in sandy soil, and 150 p.p.m. for clayey soils. Evidently the Murray Road Settlement Soils contain *relatively abundant available potash,* high values of over 200 or 250 p.p.m. occurring in many of the samples. The banana plant seems to require abundant supplies of nitrogen and potash, so that most of the Murray Road Settlement soils *at present* would appear to be ideal for growing bananas, provided other factors, such as rainfall, drainage etc., are suitable."

Stress is finally laid on the conservation of the natural soil fertility by the prevention of burning, the retention of crop residues, and adequate measures to ensure soil covers, and suitable contour drainage. Observation plots have been established with this programme in view, and anti-erosion plants, windbreaks, and shelter-belts, have been introduced for propagation when development is recommenced.

### 4. Agricultural Education.

#### (a) PEASANT ADVISORY SERVICES.

Frequent visits to small-holdings and estates of peasant proprietors were made as usual, and in certain cases of distress from loss of crop due to weather conditions, free allocations of plants were made. Peasant agriculture comprised a large proportion of the visits made by the travelling officers during the year.

#### (b) Agricultural Instruction in the Primary Schools.

The twenty-eighth annual examination of the Primary Schools in Agriculture was conducted jointly by the Agricultural Officers :— Mr. G. M. Glasgow, Agricultural Officer, Class I, and Mr. D. Alexander, Agricultural Officer, Class II, in their respective districts during November and December, 1936, Mr. R. W. Niles, the former Agricultural Instructor, having in the meantime retired from the service owing to age. Mr. Niles had up to his retirement conducted the principal inspection duties in agriculture in the Primary Schools over a long period of time, a service for which he was admirably fitted, and a warm appreciation of this work is now placed on record in this section of the Report.

During the year the periodical and surprise visits were carried out as permitted by the changes of staff, and general visits were made by all travelling officers.

The report on examination and general progress in the School garden work is given below, and shews that a total of 648 pupils including girls were taught during the year, of which only 75.9 per cent. presented themselves for examination i.e. an absentee list of 156 or 24.1 per cent. (absentees in 1935—29 per cent.). There was a high proportion of pupils missing from the examination classes at Babonneau, Riviere Dorée, Micoud, Saltibus and Choiseul Schools.

The general results for the year are not up to the average and do not compare well with that of earlier years. It is hoped that frequent visits by the Agricultural Officers will assist in some improvement, but it is obvious that the schools attach little value to agricultural teaching, which is thus relegated to a position of minor importance. The reason for this lack of interest as shewn by the teaching staff generally, is to be found to a large extent in the absence of an annual course of lectures to teachers. The younger members of the teaching staff now assuming positions of responsibility in the schools have never been able to profit by these lectures, and cannot therefore inculcate enthusiasm which is lacking in themselves.

Apart altogether from whether the sites of some school gardens are satisfactory or otherwise, there is in all districts ample teaching material at hand, if teachers would only realise this, and utilise it. One of the most frequent comments of the examiners referred to the general lack of observational powers on the part of the pupils, a teaching defect which needs early remedial measures, e.g. by the use of object lessons from life, instead of merely "book" questions and answers; by visits to local nurseries, estates and industries, etc. Such trips would provide originality, and stimulate the classes to take a personal interest in their work. One such visit was paid by the Castries Methodist Garden Class to the Departmental Experiment Station at Union, and it is quite evident that this Class has improved very markedly

as a result of such trips being arranged for the last two years. An Agricultural Officer can always be spared to supervise such demonstrations, and teachers should be prepared to co-operate in this work in their respective districts.

### The Examination of Teachers in Agriculture.

The agricultural examination of candidates qualifying for the teaching staff, was carried out in November and December, and the following notes refer to the Examiner's report of the results attained.

"The examination was conducted in two parts—theoretical and practical—each part carrying 50 marks. The results were exceedingly poor, especially in the theoretical examination, some of the candidates showing complete ignorance of the subject. Results in the practical examination were on the whole more satisfactory, and a knowledge of budding, grafting and other nursery operations was general.

| *Grade.* | *Examined.* | *Half marks or over.* | *Percentage.* |
|---|---|---|---|
| Probationers ... | 16 | 8 | 50 |
| 1st year ... | 4 | 3 | 75 |
| 2nd year ... | 4 | 3 | 75 |
| 3rd year ... | 5 | 3 | 60 |

The Gros Islet candidates have received little or no instruction in Agriculture and are correspondingly backward. It has been suggested that this should be remedied by their attendance periodically at Union Station for instruction, but no serious attention has been given to this offer."

## EXAMINERS' REPORT ON THE PRIMARY SCHOOLS.

### Micoud R.C.

*Report*: Theory: Very Good. Practice: Good.

*Comments.* The answers given to questions showed that the pupils at this school understood their work. Unfortunately the garden site is far from ideal, and an effort should be made to secure a larger and better piece of land for a garden, free from infestation by land crabs. Throughout the year the garden was cropped with egg-plants, tomatoes, cabbages, beans, yams, bananas, &c. No budding and grafting was done and an effort should be made to grow sour-orange plants for budding practice in 1937.

### Vieux-Fort R.C. Boys'.

*Report*: Theory: Very Good. Practice: Good.

*Comments.* The general condition of the garden was satisfactory. Sixteen mangoes were successfully top-worked by the class and sour-orange stocks were grown for budding. Sea Island cotton and ginger plants were cultivated, in addition to vegetables, e.g. yams, potato-yams, beans, eschalots and cabbages, all of which were well grown. Mulching is in progress.

### Forestiere Methodist.

*Report.* Theory: Very Good. Practice: Very Good.

*Comments.* The condition of the garden and the work done were both highly satisfactory, the garden being particularly well laid out and properly cared for. Different sections have been set aside for the various types of crops, and yams, bananas, garlic, onions and other vegetables were in a very healthy condition.

### Laborie R.C. Boys'.

*Report.* Theory: Good. Practice: Fair.

*Comments.* The condition of the garden was satisfactory. The plots should now be reformed, and the drains should be dug contourwise. Sand from the neighbouring ravine should be added to loosen the soil, and vegetable matter and any available pen-manure should be forked in. The crop in this garden consisted of yams, okra, garlic, tomato plants, and a few sour-orange stocks. More budding and grafting should be done, and each boy in the class should be in a position to have at least one economic plant from his work in the school-garden to plant at home each year. It is regretted that there is a lack of interest in the agricultural work in this school, and observational powers of pupils were much neglected.

Castries Anglican.

*Report.* Theory: Very Good. Practice: Good.

*Comments.* The garden work was satisfactory. The drains should be deepened and special attention paid to the main outlet drain. A greater variety of crops should be attempted besides the beds of sour-orange stock being laid out for budding.

Babonneau R.C.

*Report.* Theory: Very Good. Practice: Good.

*Comments.* The soil of the garden is very heavy, and frequent green manuring and mulching must be resorted to. Sour-orange stocks were grown for budding, and garlic, kidney beans, melons and cucumbers were also cultivated. The windbreaks received adequate attention during the year.

Castries Methodist.

*Report.* Theory: Very Good. Practice: Very Good.

*Comments.* In view of the small garden plot available, an excellent effort was made to demonstrate agricultural practices, and the class was very enthusiastic in their work. Vegetable crops were grown and the grafting of avocado pears was successful. No effort should be spared to secure a larger plot of land to provide adequate practice for this garden class.

Mon Repos R.C.

*Report.* Theory: Very Good. Practice: Very Good.

*Comments.* This garden is very well laid out and cared for, and a wide variety of crops was grown. Bananas were seen in fair condition, and budding and grafting was done. Although the soil is heavy it was well worked, and a good tilth was general throughout the garden.

Soufriere R.C. Boys'.

*Report.* Theory: Very Good. Practice: Good.

*Comments.* The pupils should be taught observation, as they do not interest themselves in agricultural matters outside of their own garden. The garden site, however, is much too small and badly situated for this important agricultural district and every effort should be made to remedy this. The garden crops were garlic, groundnuts, tomatoes, melons, cucumbers, beans, plantains, bananas, and sour-orange plants for budding. No budding or grafting was done during the year. This should be remedied in the coming year, and avocado, citrus and mango should be grafted. In this district each boy should grow and take away a tree for planting on a fixed day after the examination, in order to introduce the custom of "Arbor day" into St. Lucia.

Anse-la-Raye R.C.

*Report.* Theory: Good. Practice: Good.

*Comments.* Great difficulty has been experienced in protecting this garden from floods, but an intelligent effort is being made to do so. Vegetable crops have been grown and some sour-orange stocks have been used for budding. The soil here is very light and the use of pen-manure and heavy mulching are very necessary operations.

Castries R.C. Boys'

*Report.* Theory: Very Good. Practice: Good.

*Comments.* The school garden needs more attention given to it, and the drainage system especially needs complete reconstruction. With the large class of boys available more extensive work should be attempted. Sour-orange stocks should be grown for budding, and mangoes and avocado pears should be grafted. Some of the sweet-potato beds should be replaced by other vegetable crops requiring more skilful treatment.

Dennery R.C. Boys'

*Report.* Theory: Fair. Practice: Good.

*Comments.* The garden was in good condition and the general standard of work was high. Sour-orange stocks were grown for budding, and mango grafting was done. This class should take more advantage of the proximity of the Department's Citrus Nursery and should pay frequent visits there. A great improvement could be made in the class work generally if this were done.

Saltibus R.C.

*Report.* Theory: Good. Practice: Fair.

*Comments.* The garden was tidy, but the soil is poor and needs building up. The existing sour-orange plants are worthless and should be destroyed. The beds should be properly tilled and manured before new and healthy stocks are planted. The rough border should be cleared and replaced by a neat hedge of Crotons or Panax, and the clearings and other plant refuse should be used to start a compost heap at the south-eastern corner of the garden. The drains should be deepened. The plants in the garden consisted of a few grafted "Julie" mangoes and some "Mango Long" stock, and of chives, garlic, beans, tomatoes, and wild egg plant for grafting.

La Ressource R.C.

*Report.* Theory: Good. Practice: Good.

*Comments.* The garden crops were in fair condition. The soil of this garden is very heavy and should receive greater care; tillage, pen-manuring and mulching should be the chief operations. Windbreaks should continue to receive attention, and more beds of sour-orange stock should be laid out to improve on the budding work already done.

Choiseul R.C. Boys'.

*Report.* Theory: Good. Practice: Fair.

*Comments.* There is a lack of interest in the boys, and the work in the garden is not arranged to attract them. Greater attention should be paid to correct agricultural practice, particularly methods of vegetative propagation, and to demonstrating the improvement of soil conditions, fertility, and the conservation of moisture. There is a noticeable absence of much needed green-dressings, cover-crops, and of manure or good compost. Road cutlassings should be used for this work. The garden was cropped with cassava, sweet potatoes, yams, pineapples and Haricot beans, and a few sour-orange stocks for future budding.

Rivière Dorée Anglican.

*Report.* Theory: Poor. Practice: Very Good.

*Comments.* A fruit-orchard has been started with orange and grapefruit trees and a grapevine. The garden crop consisted of tomatoes, beans, melons, yams, bananas and lettuce, with a bed of sour-orange stocks for budding. Making of compost after the dry season and heavy mulching after the rainy season should be a regular practice here, as the soil being deficient in vegetable matter, suffers severely from drought. The garden beds also need to be reformed, as some of the drains run in the wrong direction. There has been a change of teachership to a male officer, and it is hoped that this will make a big difference to the maintenance of the school garden.

Canaries R.C.

The school was not functioning during the examination period and it was therefore not examined.

*List of Marks and Standing of Schools in Agricultural Teaching.*

| Schools. | No. absent on Examination Day. | No. of Pupils Examined. | Condition and use made of Garden. | Practical work and Knowledge. | Theoretical Knowledge. | Total. | Percentage. | Result Note. |
|---|---|---|---|---|---|---|---|---|
| Possible Marks ... ... | — | — | 10 | 10 | 10 | 30 | 100 | — |
| Micoud R.C. ... ... | 12 | 24 | 9 | 8 | 9 | 26 | 86·6 | V.G. |
| Vieux-Fort R.C. Boys'... ... | 4 | 16 | 9 | 8 | 9 | 26 | 86·6 | V.G. |
| Forestiere Methodist ... .. | 5 | 7 | 9 | 8 | 7 | 24 | 80 | V.G. |
| Laborie R.C. Boys' ... ... | 12 | 28 | 8 | 7 | 8 | 23 | 76·6 | V.G. |
| Castries Anglican ... ... | 2 | 58 | 7 | 7 | 8 | 22 | 73·3 | V.G. |
| Babonneau R.C. ... ... | 8 | 12 | 7 | 7 | 8 | 22 | 73·3 | V.G. |
| Castries Methodist ... ... | 13 | 33 | 7 | 8 | 7 | 22 | 73·3 | V.G. |
| Mon Repos R.C. ... ... | 4 | 22 | 8 | 7 | 7 | 22 | 73·3 | V.G. |
| Soufrière R.C. Boys' ... ... | 23 | 56 | 7 | 5 | 9 | 21 | 70 | G. |
| Anse-la-Raye R.C. ... ... | 13 | 23 | 7 | 7 | 7 | 21 | 70 | G. |
| Castries R.C. Boys' ... ... | 20 | 104 | 5 | 7 | 8 | 20 | 66·6 | G. |
| Dennery R.C. Boys' ... ... | 1 | 29 | 8 | 6 | 6 | 20 | 66·6 | G. |
| Saltibus R.C. ... ... | 13 | 29 | 6 | 6 | 8 | 20 | 66·6 | G. |
| La Ressource R.C. ... ... | 8 | 19 | 7 | 6 | 7 | 20 | 66·6 | G. |
| Choiseul R.C. Boys' ... ... | 7 | 18 | 6 | 6 | 8 | 20 | 66·6 | G. |
| Rivière Dorée Anglican ... | 11 | 14 | 7 | 7 | 5 | 19 | 63·3 | G. |
| Canaries R.C. ... ... | | Not | Ex | ami | ned | | | |
| | 156 | 492 | 7·3 | 6·9 | 7·6 | 21·8 | 72·5 | |

### The Education Commission.

The Education Commission visited the Colony during November. Information was provided to the Commission on social and economic conditions in relation to progress in the Colony, and on aspects of agricultural education.

### (c) AGRICULTURAL CADETS.

Six young men selected competitively from the families of small-holders and peasant proprietors were engaged during the year in the usual course of lectures and training in elementary agriculture which lasts over two years.

The curriculum followed the lines of previous years, stress being laid on practical knowledge and personal acquaintance with the subject, most of the training being carried out at the Experimental Station, Union.

The Cadets were examined in August and also at the end of the year by the Agricultural Superintendent, the general results being as follows :—

SECOND-YEAR CADETS.

| | *Practice* | *Theory* | *General* | *Totals—per cent* |
|---|---|---|---|---|
| R. Hinds ... | 21 | 39 | 9 | 69% |
| R. Jongué ... | 20 | 34 | 5 | 59% |
| E. John ... | 16 | 33 | 5 | 54% |

FIRST YEAR CADETS.

| | | | | |
|---|---|---|---|---|
| Annuncio ... | 17 | 23 | 7 | 47% |
| Valmont ... | 17 | 19 | 7 | 43% |
| Octave ... | 10 | 26 | 7 | 43% |

*Comment*: Practice—Not so good as usual.
Theory —Good generally
General —Closer supervision was necessary during the year. Certificates have been provided for the three leaving Cadets.

### 5. Publications, Correspondence, and Organisations.

No pamphlets were issued during the year, but an article on Cotton Cultivation was specially published for local circulation only; a contribution was made to the "West Indies Fruit and Vegetable Bulletin"; a Memorandum on rejected fruit was prepared for the St. Lucia Banana Association; and the issue of monthly "Agricultural Notes" was resumed as from September to meet the demand for a topical summary of agricultural activities.

The following books have been added to the Reference Library—

"Statistical Methods for Research Workers" and "The Design of Experiments" by R. A. Fisher, sc.d., f.r.s.; "Soils: Their Origin, Constitution, and Classification" by G. W. Robinson, m.a.; "The Improvement of Native Agriculture in Relation to Population and Public Health" by Sir A. D. Hall, m.a., sc.d., l.l.d., f.r.s., k.c.b.; and "Historical Geology of Antillean-Caribbean Region" by Ch. Schuchert. Many bulletins and reports were also presented or obtained reciprocally and are gratefully acknowledged.

The annual returns and revisions were provided as usual, and 216 Minute Papers and 1,206 letters were dealt with during the year.

The following organisations held meetings, attended by officers of the Department, during the year :—

The St. Lucia Banana Association and Board of Management; the West Indies Lime Oil Association; and St. Lucia Lime Producers Coy., and Citrus

Growers; the Cold Storage Committee; the St. Lucia Agricultural and Commercial Society; and the Board of Agriculture* which held four meetings.

The Board is constituted as follows:—

| | |
|---|---|
| Chairman: | His Honour the Administrator. |
| Vice Chairman: | Mr. E. A. Walters, Agricultural Superintendent. |
| Members: | Hon. G. M. Peter. |
| | Mr. J. C. duBoulay. |
| | Mr. A. E. Augustin. |
| | Mr. J. L. Royer. |
| | Mr. A. duBoulay. |
| | Mr. G. Barnard. |
| Secretary: | Mr. G. B. Gregory, Assistant Agricultural Superintendent. |

## STAFF CHANGES.

Mr. G. B. Gregory, Dip. Agric. (I.C.T.A.), was appointed Assistant Agricultural Superintendent from 9.2.36.

Miss S. Cox was appointed Assistant Clerk, 1.2.36, in place of Miss A. Inglis transferred.

Mr. R. C. Phillip was appointed Under Clerk, 1.2.36, in place of Mr. C. Charles transferred.

Mr. G. L. Phillip was appointed Temporary Copyist from 30.3.36 to 11.5.36.

Mr. G. J. Belizaire was appointed Copyist from 14.4.36, in place of Mr. A. F. Romeo, deceased.

Mr. G. M. Glasgow was appointed Agricultural Officer, Class I, from 1.8.36.

Mr. D. Alexander was appointed Agricultural Officer, Class II, from 1.8.36.

Mr. A. F. Nichols, Dip. Agric. (I.C.T.A.) A.I.C.T.A., was promoted Assistant Director of Agriculture, Department of Agriculture, Seychelles, from 12.3.36.

Mr. R. W. Niles, Agricultural Instructor and Fruit Inspector, retired from the Service after some 38 years of teaching and agricultural duties.

## ABSENCES.

| Office. | Name. | Vacation leave. | |
|---|---|---|---|
| | | from. | to. |
| Agricultural Superintendent ... | E. A. Walters ... | 31.8.36 | 5.9.36 |
| Agricultural Instructor ... | R. W. Niles ... | 1.8.36 | 30.9.36 |
| Assistant Clerk ... | Miss S. Cox ... | 7.9.36 | 26.9.36 |
| Asst. Agricultural Superintendent. ... | A. F. Nichols ... | 1.1.36 | 11.3.36 |

## OFFICIAL VISITORS.

His Honour G. H. Frith, Acting Administrator of St. Lucia; Sir G. Evans, M.A., C.I.E., Principal, Imperial College of Tropical Agriculture, and party of Post Graduate Students; Mr. G. A. Jones, Dip. Agric. (Bangor), Commissioner of Agriculture, (I.C.T.A.); Mr. C. C. Skeete, B.A., Assistant Commissioner of Agriculture, (I.C.T.A.); Mr. R. G. Fennah, M.A., A.I.C.T.A., F.R.E.S., Lecturer in Entomology, (I.C.T.A.); Mr. Francisco Sein, Jr., Assistant Entomologist, Puerto Rico; Mr. F. A. Simmons, Agricultural Assistant, Grenada; Dr. H. P. S. Gillette.

* Also attended:—(1) The Commissioner of Agriculture—Mr. G. A. Jones, Dip. Agric. (Bangor).
(2) The Assistant Commissioner of Agriculture—Mr. C. C. Skeete, B.A.
(3) Mr. A. Wimbush, Chief Conservator of Forests (Madras).

## SECTION III. FINANCIAL STATEMENT.

| | | | |
|---|---|---|---|
| HEAD XVII. | | | |
| Personal Emoluments ... ... ... ... | £1,640 | 6 | 2 |
| Travelling Allowances: | | | |
| (a) Agricultural Superintendent ... ... ... | 85 | 0 | 0 |
| (b) Assistant Agricultural Superintendent ... ... | 44 | 13 | 8 |
| (c) Agricultural Instructor ... ... ... | 58 | 6 | 8 |
| (d) Agricultural Officer, Class I ... ... ... | 88 | 18 | 4 |
| (e) Agricultural Officer, Class II ... ... ... | 31 | 0 | 8 |
| Transport Allowance for Visiting Officers, Imperial Department of Agriculture ... ... ... ... | 27 | 0 | 9 |
| Labour, Union and Castries Stations ... ... ... | 398 | 11 | 5 |
| Seeds, Plants and Manures ... ... ... ... | 151 | 5 | 5 |
| Transport and Animals ... ... ... ... | 68 | 19 | 10 |
| Miscellaneous Requisites ... ... ... ... | 19 | 11 | 5 |
| Banana Nurseries ... ... ... ... | 99 | 5 | 3 |
| Printing, including Publicity work and purchase of Books ... | 9 | 10 | 11 |
| Minor Repairs to Buildings, Union and Castries ... ... | 19 | 11 | 9 |
| Freight and Transport of Plants ... ... ... | 9 | 15 | 0 |
| Contingencies ... ... ... ... | 9 | 13 | 1 |
| Plant Disease—Labour ... ... ... ... | 204 | 16 | 8 |
| Gas Oil ... ... ... ... | 29 | 6 | 5 |
| Demonstration Fruit and Vegetable Plot ... ... | 47 | 17 | 7 |
| Experimental Lime Plot at Union Station ... ... | 69 | 0 | 9 |
| Agricultural Cadets ... ... ... ... | 159 | 6 | 0 |
| | £3,271 | 17 | 9 |
| HEAD XVIIA (Extraordinary) | | | |
| Provision of Animals ... ... ... ... | 74 | 11 | 5 |
| Maintenance and Veterinary Miscellaneous ... ... | 2 | 4 | 5 |
| | £76 | 15 | 10 |
| HEAD XVIIB (Special) | | | |
| Agricultural Society, Grant-in-Aid ... ... ... | £20 | 0 | 0 |
| HEAD XXII. Colonial Development Fund. | | | |
| Government Fruit and Vegetable Depot ... ... ... | 526 | 6 | 0 |
| Land Settlement ... . . ... | 589 | 5 | 6 |
| | £1,115 | 11 | 6 |

### REVENUE.

| | | | |
|---|---|---|---|
| *Working Account*: Dr. £131 5 7 Cr. £142 6 9 | Utilised for the purpose of minor trading transactions for peasants supplies, shipments, and plant sales; this account returned a Credit of £11 1 2 for the year ... ... ... | £11 | 1 | 2 |
| Head IV. 16. | Fees for Fruit Inspection ... ... | 67 | 19 | 8 |
| 21. | Sales from Agricultural Stations ... ... | 218 | 15 | 9 |
| | Sale of Citrus Plants ... ... ... | 37 | 13 | 0 |
| Head X 1. | Instalments, sales of Lots ... ... | 15 | 11 | 0 |
| *Deposit Account*— | | | | |
| *Land Settlement*: | This account returned a credit of £12 17 8 from sale of banana plants ... ... | 12 | 17 | 8 |
| | | £363 | 18 | 3 |

### WORK UNDER COLONIAL DEVELOPMENT FUND GRANTS—AGRICULTURAL DEPARTMENT.

1. A grant of £1,480 for a Peasants Development Scheme and of £3,820 for the establishment of the Government Marketing Depot terminated during the year, the total expenditure at the end of the year being £5,092. Provision for the latter service has been submitted on Estimates for 1937.

2. A loan of £4,823 for the provision of a Government Cold Storage and Ice Making Plant (1931) commenced to draw interest @ 5 per cent. during the year. This service has also been submitted for Estimates 1937.

3. The grant of £2,000 for Citrus Orchards (1932) produced revenue from "Sales of Citrus Plants". This Account amounted to £288 and was utilised for Nursery work—1936, and terminated during the year. Provision for Extraordinary Citrus supplies has been submitted on Estimates for 1937.

4. A Grant of £1,465 for the Entomologist on Moth-borer Control also terminated during the year.

5. Grants for a Citrus Entomoligist and for a Cotton Entomologist were being considered by the Colonial Development Fund Committee during the year.

6. The Grant of £9,219 and of a loan of £9,219 @ 3½ per cent. for 15 years commencing from the 6th year, approved from August 1935 for the Murray Road and Land Settlement Schemes, was being reviewed at the end of the year.

## SECTION IV. SUMMARY OF LEGISLATION AFFECTING AGRICULTURAL INDUSTRIES AS AT 31ST DECEMBER, 1936.

### 1. Plant Quarantine.

#### I. EXTERNAL—IMPORT PROHIBITIONS.

The introduction of all plant material is regulated under the Plants Protection Ordinance No. 14 of 1916 (Revised), and cognate subordinate legislation. Thus quarantine work involves the inspection of all seeds, plants, and miscellaneous planting material and containers introduced into the Colony during the year, and is carried on in conjunction with the Post Office and Customs authorities. The introduction of soil, fruit and vegetables is further regulated by legislation under the Customs Amendment Ordinance No. 2 of 1920.

The following schedule gives the position of legislation regulating the importation of material likely to be a means of introducing diseases or pests.

A. *Prohibited articles, including seeds, plants, soil and packages and articles connected therewith.*

| Articles Prohibited. | Country of Origin. | Reasons for Prohibition. | Index of Legislation. |
|---|---|---|---|
| 1. Plants and Seeds. | Ceylon, | General precautions. | Revised Rules, Chapter 7, Regulation 2. |
| 2. Cacao plants or any parts thereof. | South America, South and East of Panama. | Witchbroom disease. | Revised Rules, Chapter 7, Regulation 2. |
| 3. Banana plants or any parts thereof. | Trinidad, Tobago, Central and South America, Jamaica, Grenada, Canary Islands & West Africa. | Panama disease, root disease and insect pests. | Revised Rules, Chapter 7, Regulation 2. Proclamation of 8.9.17. Proclamation No. 6 of 1925. Proclamation No. 13 of 1925. |
| 4. Coffee, guava, mango, sapodilla, star-apple, plants, fruits, etc. | Bahamas, Ceylon, Cuba, Jamaica, India, Philippines. | Citrus Black Fly. | Proclamation of 10.2.17. |
| 5. All soil, fruit and vegetables, except plantains, nuts, onions, Irish potatoes, canned, candied, dried, or processed fruit and vegetables. | Countries other than the British Isles, Canada and British West Indies * | Mediterranean Fruit Fly. | Customs Amendment Ordinance No. 2 of 1920—Notice No. 7 of 1930. |

* A Certificate of Origin is necessary for the non-prohibited countries.

B. *Prohibited articles except under licence and specified provisions.*

| Articles Prohibited. | Country of Origin. | Reasons for Prohibition. | Index of Legislation. |
|---|---|---|---|
| 1. Sugar-cane, corn, sorghum, fodder, grasses and seeds of grasses. (Natural Order—Graminae). | Any place beyond the limits of the Colony. | Mosaic disease of cane | Proclamation No. 6 of 1921. |
| 2. Coconuts, Coconut plants, or any parts thereof. | From any place. | Red Ring disease, other diseases. | Proclamation No. 2 of 1924. |
| 3. Cotton seed, seed cotton. | From any place. | Pink Bollworm, other pests or diseases. | Proclamation No. 3 of 1924. |
| 4. Citrus plants, fruits and any parts thereof. | From any place. | Citrus Canker, citrus black fly, & general precautions. | Proclamation No. 3 of 1927. |

C. *Permitted articles, provided these have passed inspection by the Agricultural Department or are otherwise authorised to be imported.*

| Articles Permitted. | Country of Origin. | Index of Legislation. |
|---|---|---|
| 1. Garden seeds, (not including corn, grasses, etc.) | From any place. | Plants Protection Ordinance, No. 14 (1916 Rev.) |
| 2. Plants, root-stocks, nuts, tubers, bulbs, cuttings, etc., free from soil, and not included under "A" and "B". | — | — |

II. INTERNAL (a)—EXPORT PROHIBITIONS.

| Prohibited Exports. | Destination. | Index of Legislation. |
|---|---|---|
| 1. Specified Fresh Fruits, nuts and Vegetables e.g. limes, oranges, grapefruit, lemons, mangoes, avocados, papaws, pineapples, bananas, tangerines, mandarines, melons, tomatoes, carrots, string beans, egg-plants, cucumbers, okra, pumpkins, cabbages, peppers, etc., unless under the certificate of the Chief Fruit Inspector. | All countries—<br><br>*Exceptions:*<br>—West Indies (not Bermuda).<br>—Limes to U.S.A. | Ordinance No. 13 of 1930, Amendment Ordinance No. 1 of 1933, No. 17 of 1933 and No 3 of 1934. Notice No. 4 of 1930 Order No. 5 of 1930, No. 3 of 1931. Rules No. 6 of 1933 and No. 6 of 1934. |
| 2. Bananas—"Gros Michel" except through St. Lucia Banana Association, or rejected and non-required fruit; and except "Cess" paid 1*d.* per count bunch on above. | To any place. | Ordinance No. 1 of 1934. Amendment Ordinance No. 16 of 1934. No. 11 of 1935. No. 3 of 1936. Regulation No. 20 of 1936. |
| 3. Lime seeds, not in fruit or dried. | To any place. | Notice No. 6 of 1925 (Customs Ordinance No. 109, 1916 Rev.) |
| 4. Agricultural Export products unless specified duty paid. | To any place. | Ordinance No. 11 of 1926. Amendment Ordinance No. 20 of 1926 and No. 9 of 1929. |
| 5. General planting material if notified as not conforming to overseas conditions. | To any place. | Customs Ordinance No. 109, 1916 Rev: Requires Export certificates to United Kingdom etc. |

(b)—CONTROL OF DISEASES AND PESTS WITHIN THE COLONY.

| Notifiable Diseases and Pests. | Locality. | Index of Legislation. |
|---|---|---|
| 1. *Cuscuta spp.* "Dodder" | Generally | Plants Protection Ordinance, No. 14, 1916 Rev. and Amendment Ordinance, No. 3 of 1931. |
| 2. *Loranthaceae spp.* "Bird Vine", Mistletoe | ,, | Proclamation No. 34 of 1919. |
| 3. Coconut Budrot | ,, | Proclamation No. 34 of 1919. |
| 4. Panama disease, Marasmius disease, Banana Borer and Weevil | ,, | Proclamation No. 4 of 1924, Rules No. 8 of 1924, No. 15 of 1924 and No. 15 of 1926. |
| 5. Pink Boll-worm, Cotton Stainer, and Leafblister Mite. | ,, | Proclamation No. 4 of 1926. |

## 2. Animal Quarantine.

I. EXTERNAL.—IMPORT PROHIBITIONS.

| Prohibited Importation. | Country of Origin. | Reasons. | Index of Legislation. |
|---|---|---|---|
| 1. Animals and birds, etc.; Manure, fodder and litter, unless provided with Veterinary Certificate and local inspection certificate. | All places | Prevention of Animal diseases. | Ordinance No. 3 of 1935 Notice No. 8 of 1930. |
| 2. Bees or hives | ,, | Prevention of Foul Brood disease. | Ordinance No. 18, 1916 Rev. Amendment Ordinance No. 13 of 1928. |

II. INTERNAL.—CONTROL OF ANIMAL DISEASES WITHIN THE COLONY.

| Notifiable Diseases. | Measures. | Index of Legislation. |
|---|---|---|
| Anthrax, Rinderpest, Contagious Pleuro-Pneumonia, Glanders, Epizootic Lymphangitis, Foot-and-Mouth disease, Sheep Pox, Bovine and Caprine Contagious Abortion, Tuberculosis, Swine Fever, Rabies, Mange, Sheep-scab, etc. | Destruction, disinfection, isolation, regulation of movement. | Ordinance No. 3 of 1935. |

### 3. Miscellaneous Legislation affecting Agricultural Industries.

| Measure. | Object. | Index of Legislation. |
|---|---|---|
| 1. Board of Agriculture | Advisory authority on Agricultural matters | Ordinance No. 9 of 1933. Amendment Ordinance No. 27 of 1933. |
| 2. Crown Lands | Land Settlement, Allotment & Sale, Water Reserves, Timber. See also 3 (*b*). (All allotments now require approval of Superintendent of Agriculture) | Ordinance No. 45 of 1916 Rev. Amendment Ordinance No. 17 of 1926. |
| 3. *Protection.* | | |
| (*a*) Minor Products Protection | Prevention of Praedial Larceny | Ordinance No. 13 of 1916 Rev. Amendment Ordinance No. 15 of 1923 and Commercial Code, 1920. |
| (*b*) Timber Protection | Regulation of Deforestation | Ordinance No. 22 of 1918. |
| (*c*) Turtle & Fish | Close Season | Ordinance No. 19 of 1916 Rev |
| (*d*) Wild Birds Protection | Close Season; Licences to Export | Ordinance No. 20 of 1916 Rev. |
| 4. Labour conditions | Regulation of Minimum Wage (Agricultural) | Ordinance No. 5 of 1935. Order No. 55 of 1936. |
| 5. Public Health | Animal-keeping, & sale of animal products | Ordinance No. 17 of 1931. Rules 11 of 1922: 4 of 1935: & Reg. 57 of 1936. |

## APPENDIX I.

### REPORT ON THE WORK OF THE GOVERNMENT MARKETING DEPOT.

#### 1. Inspection of Export Produce.

This important service was continued throughout the year, the Inspection Staff consisting of the Manager, as Chief Fruit Inspector, and the two Agricultural Officers. In all a total of 14,939 packages of fruit was inspected and passed for export, the corresponding figures for 1935 and 1934 being 15,248 packages and 11,872 packages. Inspection fees amounted to £67 19 8 (1935—£80 11 2, 1934—£48 16 4). It will be noticed that while the number of packages inspected is comparatively close to last year's total there is a marked decline in amount of inspection fees: this may be explained by the fact that in 1935 the inspection of bananas and the collection of fees therefrom formed a part of the Departmental activities, whereas, in 1936, the Banana Association had charge of the grading and inspection of this product, and no fees were collected.

The smooth working of the inspection service was a feature of the year, and exporters now readily co-operate with the Fruit Inspectors. The number of licensed packing houses is now five, in addition to the two sheds belonging to the Depot.

2. Depot Operations.

The Depot continued to be used by the small exporters whose business does not warrant the erection of their own packing houses; the larger exporters also availed themselves of the facilities of the Depot when pressed for space in their own premises. Limes and mangoes for Canada and Bermuda, Grapefruit for Canada, avocados and pumpkins for Bermuda, and limes and mangoes for England were the chief items handled.

No cold storage trials were undertaken this year, but it is proposed to carry out experiments with avocado pears in 1937.

(a) EXPERIMENTAL SHIPMENTS OF FRUIT FROM THE DEPOT.

Limes.

The application of Sanctions against Italy during the Italo-Ethiopian conflict aroused optimism for the prospects of green limes on the English market to replace Italian lemons which were no longer freely available. Accordingly two experimental shipments of green limes were made to London in the months of April and June. The fruit was packed in lugs, and was shipped, by way of further experiment, by ordinary storage. The fruit arrived in excellent condition, but it was unfortunate that no satisfactory prices could be obtained. Sales were so slow that the majority of the fruit deteriorated before it could be absorbed by the market, and the results of these shipments have shewn that there is little or no prospect of marketing West Indian limes in London. In this connection, the following quotation from the last letter received from the brokers who handled the fruit should be of interest: in giving their reasons for poor sales, the brokers say that they are "...due to the fact that the general public here will not display interest in limes, partly because they are unknown, and partly because they are looked upon as unripe, small, green lemons—throwouts".

The results of the two shipments are summarised below:—

*Summary of Lime Shipments to London.*

| Date. | *1st Shipment.* April 30th | *2nd Shipment.* June 26th |
|---|---|---|
| No. of Crates | 78 | 67 |
| | £ s. d. | £ s. d. |
| Freight ... ... ... ... ... | 3 5 10 | 2 16 3 |
| Packing, crates, handling, etc. ... ... ... | 5 16 11 | 4 11 1 |
| G.M.D. commission ($2\frac{1}{2}\%$) ... ... ... | 6 10 | 1 10 |
| Total c.i.f. expenses (exclusive of cost of fruit) ... ... | £9 9 7 | 7 9 2 |
| C.i.f. expenses (exclusive of cost of fruit) per crate (approx.) | 2 5 | 2 3 |
| Average selling price London (less English charges) per crate | 3 6 | 1 $1\frac{1}{2}$ |
| Net per crate at Packing House (exclusive of cost of fruit) ... | 1 1 | 1 $1\frac{1}{2}$ |

Mangoes.

In view of the fairly satisfactory results of last year's shipments to London, it was decided to continue these efforts during 1936. Three shipments of Julie Mangoes were made to England by the Depot, the fruit being

wrapped and packed in the standard lug, and carried in cold storage. A summary of the results is given :—

*Summary of Julie Mango Shipments to England in* 1936.

| Date. | *1st Shipment.* June 26 | *2nd Shipment.* July 25 | *3rd Shipment.* August 19 |
|---|---|---|---|
| No. of Crates. | 75 | 257 | 116 |
| | £ s. d. | £ s. d. | £ s. d. |
| Gross expenses ... ... ... | 11 3 6 | 42 7 10 | 19 7 11 |
| Receipts ... ... ... | 31 12 6 | 52 2 2 | 51 12 0 |
| Net per crate at Packing House ... | 5 7 | 8 | 5 $6\frac{1}{2}$ |
| Approx. net per fruit at Packing House ... | $1\frac{3}{4}$ | $0\frac{1}{4}$ | $1\frac{3}{4}$ |

These results may be regarded as satisfactory. The reports on the condition of the fruit were favourable, this improvement being due mainly to the information derived and methods adopted from the cold storage trials described in last year's report. It was the opinion of the brokers, however, that the Depot had been fortunate in obtaining such satisfactory results. In spite of this there is reason to believe that future shipments should provide remunerative returns, and every effort will be made to explore this limited market. Production locally is increasing rapidly, and such a fruit as the Julie deserves a better fate than to be regarded as of no more value than the common "Mango Long".

## Stock Account.

This revolving account is operated in order to purchase packing materials co-operatively for exporters; the maximum authorised expenditure is £350.

The Balance Sheet for the year ending 31st December, 1936, is entered below, and shews a gross profit of £86 4 11 (1935=£110 7 11) credited to General Revenue. No further marking down of prices was found possible during the year, and the scale of charges has therefore remained the same as at the end of 1935.

The Stock Account does not include charges for depreciation, reserve, or official supervision, as these items are provided for under the Depot Grant (Colonial Development Fund). As the funds under the Grant came to an end during 1936, business was carried on under an Advance Account, and for 1937 the Depot will come under the Colony's Estimates with an estimated expenditure of £358.

| *Dr.* Particulars. | Amount. £ s. d. | *Cr.* Particulars. | Amount. £ s. d. |
|---|---|---|---|
| Stock on hand at 1.1.36 ... | 139 5 3 | Cash Sales ... ... | 474 17 7 |
| Surplus Stock at 31.12.35 omitted in 1935 Balance Sheet of Stock on hand at 31.12.35 ... | 1 5 | Outstanding A/cs. ... | 11 8 2 |
| Outstanding a/c. at 1.1.36 ... | 16 17 3 | Stock on hand at 31.12.36 ... | 223 18 8 |
| Purchases and Labour etc. ... | 437 5 6 | | |
| Import Duty & Stamp ... | 30 10 1 | | |
| Balance Credit ... ... | 86 4 11 | | |
| | £710 4 5 | | £710 4 5 |

## APPENDIX II.

### GOVERNMENT ICE AND COLD STORAGE PLANT.

Continued use was made of the Plant for precooling and for local cold storage, although receipts for these items were somewhat lower than in 1935. (Precooling and local storage: 1936—£228 2 0; 1935—£275 15 7). Ice sales showed an increase of £30 9 3 over 1935.

An increased expenditure of £84 10 4 was necessitated by the demand for lower temperatures in the storage rooms, and also additional ice manufacture.

All ice made is now taken over by private enterprise under contract, and efforts are being made to offer further facilities leading to the increased use of cold storage by the general public.

The statement of the working of the Ice and Cold Storage plant for 1936 is shown below:—

STATEMENT OF THE WORKING OF THE GOVERNMENT ICE AND COLD STORAGE PLANT FOR 1936.

*Dr.* *Cr.*

| Particulars. | Amount. £ s. d. | Particulars. | Amount. £ s. d. |
|---|---|---|---|
| Salaries ... ... | 146 0 0 | Ice Sales ... ... | 238 4 10 |
| Labour ... ... | 95 16 5 | Rent for Ice Depot ... | 6 17 6 |
| Mechanic ... ... | 31 18 2 | Precooling ... ... | 7 17 6 |
| Stores ... ... | 92 17 0 | Battery Charging ... | 21 12 0 |
| Fuel ... ... | 239 10 7 | Cold Storage dues ... | 199 6 2 |
| Contingencies ... ... | 16 16 10 | | |
| Total Expenditure ... | £612 19 0 | Total Receipts ... | £473 18 0 |
| | | *Outstandings*:— | |
| | | Ice Sales ... ... | 5 14 4 |
| | | Cold Storage dues ... | 20 18 4 |
| | | *Stock on hand* | |
| | | Ice ... ... | 6 19 2 |
| | | Unused Fuel... ... | 4 12 9 |
| Credit Balance ... ... | 8 16 11 | Unused Stores (approx.) ... | 109 13 4 |
| | £621 15 11 | | £621 15 11 |

## APPENDIX III.

### REPORT ON REUNION ESTATE, LAND SETTLEMENT, AND CHOISEUL VILLAGE EXTENSION.

Two lots out of the total of 46 remain unsold. Subsidiary portions of land were allotted and sold during the year, a total sum of £1,045 0 11 having now been collected from this area. In the Choiseul Village Extension 11 lots out of 19 remain unsold and £5 11 0 was collected during the year. It is hoped to conclude further sales and to wind up this scheme (1913) at an early date.

## APPENDIX IV.

THE MURRAY ROAD AND LAND SETTLEMENT SCHEMES. COLONIAL DEVELOPMENT FUND.

In order to co-ordinate the agricultural programme with the principles laid down in the Forestry Report (cf. page 15) progress on these Schemes has been deferred pending the approval of a modified plan of road and settlement development, and only essential work in maintaining the existing plant nursery, the control of Panama Disease, and the exercise of supervision to restrict "squatting" and the cutting of timber, has been carried on since April of last year. As a result of the frequent inspections now made throughout this area, the clearing and burning of forest land has completely ceased for the present. There still exists a strong demand for land in this area however, and it is to be hoped that localised settlement on organised lines will soon be facilitated as a means of preventing promiscuous clearing generally in the forests of the Colony.

The report on the examination of soils in this area (cf.p. 31) is promising, and provided sound agricultural methods are introduced from the inception of settlement there is a good prospect of satisfactory crop yields being prolonged, due to the natural reserves of fertility possessed by these soils in their original state. The settlement plan also provides for the protection of areas already exposed by squatters clearings, and the incorporation of these into settlement plots or for conservation into a forest reserve. Observations taken during the year on rainfall and temperature conditions show that this area received a well distributed rainfall, and suffered from no violent precipitation, and that temperatures were relatively uniform with a moderate range.

## APPENDIX V.—METEOROLOGICAL OBSERVATIONS.

STATION, CASTRIES, ST. LUCIA, B.W.I.

LONGITUDE=60° 59′ 49″ W. LATITUDE=14° 0′ 36″ N. HEIGHT ABOVE SEA LEVEL =10ft.

| Month. | Air Temperature. | | | | Absolute Max. and Min. | | | | Relative Humidity (% Regnault's factor.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7 a.m. | 12 noon | 5 p.m. | Mean | Max. | Date | Min. | Date. | 7 a.m. | 12 noon | 5 p.m. |
| January ... | 70·8 | 78·6 | 76·5 | 75·3 | 86 | 1st | 63 | 23rd | 91 | 70 | 74 |
| February ... | 69·6 | 79·2 | 76·0 | 74·9 | 86 | 10th | 61 | 18th | 91 | 67 | 72 |
| March ... | 70·0 | 79·9 | 78·1 | 76·0 | 89 | 1st | 62 | 27th | 92 | 66 | 70 |
| April ... | 73·0 | 81·4 | 79·0 | 77·8 | 88 | 28th | 65 | 27th | 92 | 66 | 71 |
| May ... | 74·0 | 83·2 | 80·5 | 79·2 | 90 | 19th | 69 | 7th | 93 | 66 | 74 |
| June ... | 74·7 | 81·9 | 79·8 | 78·8 | 89 | 12th | 64 | 9th | 93 | 73 | 79 |
| July ... | 75·4 | 81·5 | 79·3 | 78·7 | 89 | 26th | 68 | 3rd | 93 | 76 | 81 |
| August ... | 76·0 | 83·7 | 80·7 | 80·1 | 91 | 3rd | 68 | 11th | 94 | 72 | 77 |
| September | 76·3 | 83·9 | 78·7 | 79·6 | 91 | 24th | 70 | 28th | 94 | 73 | 86 |
| October ... | 74·8 | 82·9 | 78·8 | 78·8 | 89 | 17th | 69 | 16th | 95 | 73 | 83 |
| November | 75·0 | 81·8 | 78·1 | 78·3 | 89 | 29th | 63 | 5th | 93 | 75 | 82 |
| December ... | 71·3 | 81·8 | 76·2 | 76·4 | 90 | 7th | 62 | 10th | 92 | 76 | 84 |
| Year ... | 73·4 | 81·7 | 78·5 | 77·8 | 91 | 3rd Aug. 24th Sept. | 61 | 18th Feb. | 93 | 71 | 78 |

*ht.*=3′ 0″ *hr.*=1′ 0″. STATION CASTRIES.

| Month. | Rainfall (inches) | | | Weather. | | Wind. No. of Observations of. (at 7 a.m., 12 noon, & 5 p.m.) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Max. | Date | Days of Rain | Days of Gales. | N. | N.E. | E. | S.E. | S. | S.W. | W. | N.W. | Calm |
| January ... | 3·34 | ·50 | 18th | 18 | 0 | — | — | 61 | 20 | 8 | 1 | 1 | — | 2 |
| February | 2·24 | ·48 | 22nd | 16 | 0 | — | — | 66 | 15 | 4 | 2 | — | — | — |
| March ... | ·15 | ·05 | 23rd & 27th | 4 | 0 | 1 | — | 81 | 6 | 2 | 2 | — | — | 1 |
| April ... | 1·77 | ·45 | 5th | 15 | 0 | — | — | 72 | 12 | 3 | 1 | 2 | — | — |
| May ... | 6·31 | 1·66 | 20th | 22 | 0 | — | — | 71 | 12 | 7 | 1 | — | — | 2 |
| June ... | 10·08 | 2·05 | 23rd | 25 | 0 | 2 | 2 | 64 | 10 | 3 | — | — | — | 9 |
| July ... | 12·88 | 2·00 | 3rd | 30 | 0 | — | 4 | 75 | 5 | 2 | 4 | 1 | — | 2 |
| August .. | 6·49 | 1·15 | 18th | 24 | 0 | — | — | 88 | — | — | — | — | — | 5 |
| September | 9·92 | 1·52 | 28th | 25 | 0 | — | — | 90 | — | — | — | — | — | — |
| October .. | 13·02 | 2·09 | 5th | 25 | 0 | — | — | 84 | 5 | — | — | — | — | 4 |
| November | 13·47 | 5·55 | 2nd | 25 | 0 | — | 9 | 47 | 18 | 3 | 1 | 6 | 3 | 3 |
| December | 10·82 | 5·30 | 28th | 24 | 0 | — | 6 | 50 | 13 | 5 | 6 | 4 | 3 | 6 |
| Year ... | 90·49 | 5·55 | 2nd Nov. | 253 | 0 | 3 | 21 | 849 | 116 | 37 | 18 | 14 | 6 | 34 |

ht.=Height of therm. above the ground in feet. hr.=Height of the rainguage above the ground in feet.

## METEOROLOGICAL CONDITIONS.

*Rainfall*: The total recorded at the Botanic Gardens, Castries, for the year 1936, was 90·49″. This was 8·70″ above that of the previous year, and approximate to the average rainfall for 47 years (1890—1936) the average now being 90·73″ per annum. Maximum precipitation for Castries occurred on November 2nd when a heavy fall of 5·55″ was recorded, being the maximum for many years. The highest maximum precipitation for the Colony in general was 12·50″ recorded on May 22nd. The distribution of rain was abnormal and irregular, coastal areas in several instances receiving extremely heavy falls (4″ in 4 hours) as compared with 1″ at upland stations.

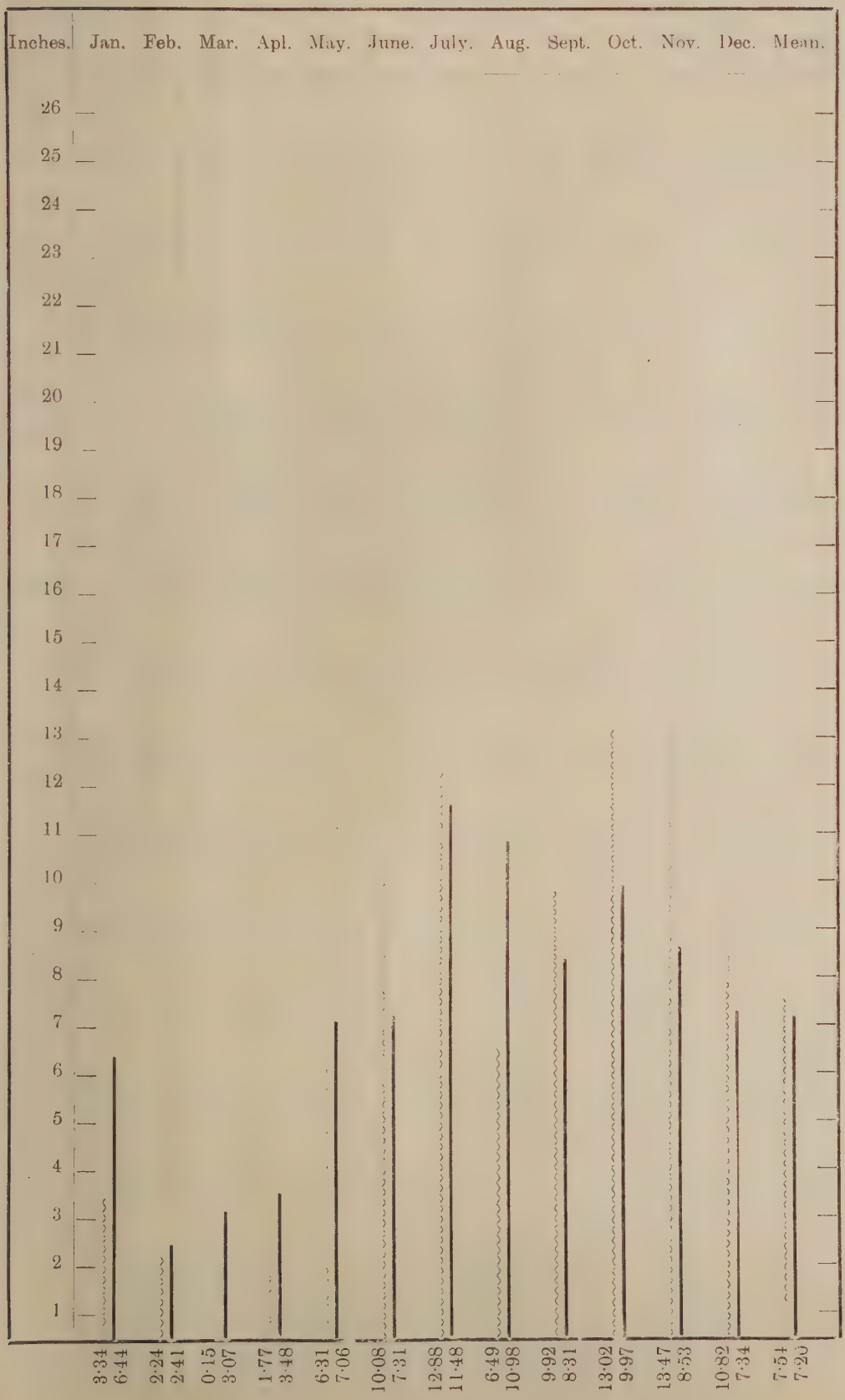
*Weather*: Some extremes of dry and wet weather were experienced during the year and there were several severe thunder-storms. Serious flooding was experienced in the low-lying areas on 2nd November. The southern extremity of the Island shewed effects of the drought in the period January to April when less than 5″ of rain fell. Planting operations were rendered more difficult than usual.

*Temperature*: The mean noon shade temperature was 81·7° F., the maximum temperature was 91° F., and the minimum temperature was 61° F., an increased range of 30°. Temperatures were generally lower than usual, and except for the month of June and again in August when high humidity resulted in sultry conditions, there were persistent cooling winds giving a general effect of exhilaration.

*Stations*: The number of rainfall stations recording during the year was 36. A cordial appreciation of the services of the recorders is again placed on record.

# APPENDIX VI.

## GRAPH OF MONTHLY RAINFALL—47 YEARS (1890—1936) CASTRIES, ST. LUCIA, B.W.I.




*Legend.*

——— Average for 47 years.

- - - - - Rainfall during 1936.

# APPENDIX VII.

## RAINFALL RETURNS, 1936.

| Observation Stations. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. | Maximum in one day and date. | | No. of days of rain. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | | |
| Gros Islet, Reduit Estate | 1·78 | 2·46 | ·93 | 1·62 | 5·32 | 11·67 | 11·03 | 6 27 | 5·52 | 9·49 | 7·57 | 4·44 | 68·10 | 3·11 | 23rd June | 189 |
| Castries, Corinth .. ... | 3·11 | 3·02 | ·49 | 1·18 | 7·47 | 9·64 | 13·30 | 10·05 | 7·23 | 17·98 | 12·39 | 6·28 | 92·14 | 4·65 | 2nd Nov. | 145 |
| Marquis Estate ... | 2·76 | 3·23 | ·52 | 1·38 | 9·58 | 11·54 | 11·18 | 9·72 | ... | 14·98 | ... | ... | 64·89* | 3·08 | 20th May | 168 |
| †Union Experiment Stn. | 3·93 | 2·99 | 1·20 | 1·83 | 9·43 | 11·08 | 12·89 | 9·75 | 8·37 | 15·12 | 20·03 | 7·25 | 103 87 | 5·31 | 2nd Nov. | 236 |
| Choc Estate ... | 2·51 | 2·54 | ·66 | 1·54 | 6·00 | 9·00 | 10·25 | 7·25 | 6·96 | 13·48 | 12·58 | 7·85 | 80·62 | 4·25 | .. | 209 |
| †Botanic Gardens ... | 3·34 | 2·24 | ·15 | 1·77 | 6·31 | 10·08 | 12·88 | 6·49 | 9·92 | 13·02 | 13·47 | 10·82 | 90·49 | 5·55 | ,, | 253 |
| The Barracks, Vigie ... | 2·81 | 2·11 | ·69 | 1·91 | 6·70 | 7·75 | 10·90 | 4·58 | 6·45 | 9·46 | 15·50 | 7·83 | 76·69 | 5·53 | ,, | 183 |
| Soucis Est., Cul-de-Sac | 3·37 | 2·14 | ·68 | ·70 | 10·92 | 11·94 | 14·29 | 7·94 | 10·18 | 18·91 | 22·54 | 4·81 | 108·42 | 6·80 | ,, | 162 |
| Mont D'Or Est., Roseau | 2·75 | 2·67 | ·54 | 2·34 | 10·21 | 12·57 | 13·84 | 11·12 | 13·43 | 12·84 | 19·95 | 7·29 | 109·55 | 4·49 | .. | 235 |
| Belair Estate, ,, ... | 1·84 | 2·08 | ·56 | 1·14 | 6·73 | 9·10 | 10·05 | 8·84 | 12·37 | 10·68 | 17·75 | 6·24 | 87·38 | 4·00 | 1st Nov. | 219 |
| Vanard ,, ,, ... | 2·75 | 3·02 | ·88 | 2·20 | 10·43 | 11·38 | 14·48 | 9·65 | 14·52 | 13·37 | 18·25 | 7·48 | 108·41 | 4·80 | .. | 139 |
| Roseau ,, ,, ... | 2·38 | 2·56 | ·46 | 1·62 | 10·87 | 11·18 | 13·18 | 7 32 | 11·66 | 10·84 | 19·05 | 5 72 | 96·84 | 6·30 | 2nd Nov. | 225 |
| †Barre de l'Isle Nursery | 3·51 | 4·97 | 1·68 | 2·95 | 17·07 | 12·31 | 15·34 | 12·53 | 18·00 | 16·09 | 17·20 | 7·20 | 128·85 | 4·31 | 21st May | 296 |
| Ravine Poisson Estate | 3·06 | 4·05 | 1·23 | 2·47 | 14 23 | 14·69 | 13·35 | 9·50 | 16·63 | 16·18 | 17·02 | 7·81 | 120·22 | 4·00 | .. | 143 |
| Soufrière, La Perle Estate | 2·88 | 2·23 | ... | 4·53 | 7·98 | 17·39 | 15·65 | 8·05 | 11·10 | 16·38 | 11·72 | 5 05 | 102·96 | 2·88 | .. | 174 |
| Ruby Estate ... | 4·00 | 2·88 | 1·88 | 4·08 | 8·14 | 16 81 | 15·98 | 8·82 | 10·84 | 14·63 | 13·59 | 3·95 | 105·60 | 3·39 | 22nd May | 138 |
| Fonds Doux Estate ... | 2·25 | 2·69 | ·54 | 3·20 | 6·78 | 15·29 | 13·25 | 9·03 | 8·34 | 10·39 | 8·56 | 4·52 | 84 84 | 3·12 | 23rd June | 233 |
| Union Vale ,, ... | 2·47 | 2·47 | ·38 | 2·40 | 7·74 | 16·15 | 15·37 | 10·57 | 8·36 | 12·19 | 6·70 | 3·31 | 88·11 | 3·50 | 9th Aug. | 192 |
| Beausejour ,, ... | 4·18 | 4·57 | 1·05 | 4·58 | 9·98 | 20·42 | 16·61 | 11·21 | 10·13 | 13·47 | 11·24 | 6·55 | 113·99 | 2·95 | 23rd June | 307 |
| Belle Plaine ,, .. | 4·30 | 4·86 | 1·15 | 5·71 | 10·26 | 19·92 | 18·37 | 10·85 | 10·03 | 14·19 | 13·42 | 8·29 | 121·35 | 2·90 | ,, | 296 |
| Rabot Estate ... | 2·99 | 3·71 | ·64 | 4·33 | 8·24 | 17·05 | 16·88 | 10·23 | 7·79 | 13·79 | 9·92 | 5·52 | 101·09 | 3·50 | 25th May | 235 |
| †Rabot Nursery ... | 2 93 | 3 71 | ·53 | 4·27 | 7·42 | 16·79 | 17·65 | 9·77 | 8·63 | 13·43 | 11·61 | 6·65 | 103·39 | 2·65 | 2nd Nov. | 274 |
| †Quilesse Station ... | 6·43 | 6·87 | 2·95 | 5·25 | 15·46 | 19·13 | 17·45 | 13·02 | 17·22 | 18·82 | 20·26 | 8·85 | 144·86 | 3·04 | 29th Sep. | 270 |
| Choiseul, Morne Lezard Est. | 2·44 | 3·63 | ·36 | 2·48 | 9·31 | 13·47 | 10·79 | 8·86 | 8·95 | 8·83 | 8·62 | 5·88 | 83·62 | 3·80 | .. | 170 |
| Park Estate ... | 3·64 | 3 87 | ·66 | 3·10 | 11·80 | 19·15 | 12·94 | 11·28 | 13·59 | 12·48 | 11·07 | 7·75 | 111·33 | 4·65 | ,, | 221 |
| Woodlands Estate ... | 3·34 | 9·14 | 1·16 | 2·91 | 13·16 | 28·18 | 18·87 | 12·63 | 20·83 | 12·57 | 16·87 | 9·16 | 148·82 | 5·33 | ,, | 254 |
| Londonderry Estate ... | 3·11 | 3·94 | ·40 | 2·19 | 10·37 | 14·12 | 8·43 | 7·59 | 8·69 | 11·53 | 10·42 | 5·63 | 86·42 | 3·76 | ,, | 186 |
| Laborie, Giraud Estate ... | 2·88 | 3·66 | ·66 | 2·57 | 9·33 | 15·92 | 10·01 | 11·77 | 11·54 | 9·23 | 10·65 | 7·96 | 96.18 | 4·76 | ,, | 156 |
| Black Bay Estate ... | 2·18 | 2·95 | ... | 2·01 | 9·72 | 12·77 | 7·51 | 4·88 | 9·79 | 7·36 | 9·59 | 4·66 | 73·42 | 4·05 | ,, | 129 |
| Vieux-Fort, Retraite Est. | 1·87 | 3.60 | ... | 3·24 | 8·38 | 14·22 | 8·29 | 6·95 | 8·44 | 5·21 | 11·67 | 3·27 | 75·14 | 4·25 | ,, | 130 |
| Moule-à-Chique ... | 1·05 | 1·52 | 1·01 | 1·76 | 6·97 | 12·53 | 4·35 | 7·84 | 7·64 | 3·86 | 6·66 | 2·87 | 58·06 | 3·22 | 10th Aug. | 97 |
| Pointe Sable Estate ... | 1·49 | 1·80 | ·70 | ·45 | 6·39 | 12·08 | 6·74 | 6·55 | 6·50 | 5·76 | 11·60 | ·80 | 60·86 | 4·69 | ,, | 69 |
| Micoud, Troumassée Est. | 1·10 | 2·35 | ·75 | .75 | 16·65 | 20·05 | 8·75 | 2·50 | 6·50 | 2·50 | 9·50 | 3·26 | 74 66 | 12·50 | 22nd May | 70 |
| Dennery, Mamiku Estate | 1·60 | 2·63 | ·51 | ·45 | 13·41 | 13·72 | 10 09 | 7·31 | 9·30 | 11·05 | 13·90 | 3·09 | 87·06 | 6·80 | 21st May | 209 |
| Prospect ,, ... | 2·60 | 3·91 | ·91 | 2·00 | 17·57 | 17·20 | 13·02 | 8·50 | 13·70 | 13·05 | 17·47 | 6·65 | 116·58 | 7·45 | ,, | 268 |
| Border ,, ... | 2·53 | 3·13 | ·71 | 1·98 | 15·89 | 16·15 | 11·46 | 8·13 | 12·24 | 13·85 | 16·65 | 4·87 | 107·59 | 7·45 | ,, | 281 |

* Record not complete. † Departmental.

| | Woodlands. | Troumassée. | Beausejour. |
|---|---|---|---|
| Maxima= | 148·82 | 12·50—22nd May. | 307 |

APPENDIX VIII.

GRAPH of RAINFALL of the BOTANIC GARDENS, Castries during the period 1890—1936.

| Year. | Rainfall. " | Average per annum. |
|---|---|---|
| 1890 | 88·11 | 90·73 |
| 1891 | 70·15 | |
| 1892 | 109·67 | |
| 1893 | 113·60 | |
| 1894 | 81·55 | |
| 1895 | 121·29 | |
| 1896 | 113·93 | |
| 1897 | 111·26 | |
| 1898 | 107·49 | |
| 1899 | 84·64 | |
| 1900 | 73·25 | |
| 1901 | 99·71 | |
| 1902 | 91·43 | |
| 1903 | 86·84 | |
| 1904 | 77·72 | |
| 1905 | 72·64 | |
| 1906 | 81·84 | |
| 1907 | 71·33 | |
| 1908 | 79·98 | |
| 1909 | 85·43 | |
| 1910 | 107·01 | |
| 1911 | 107·67 | |
| 1912 | 88·10 | |
| 1913 | 89·53 | |
| 1914 | 67·60 | |
| 1915 | 116·20 | |
| 1916 | 110·48 | |
| 1917 | 85·65 | |
| 1918 | 84·95 | |
| 1919 | 88·25 | |
| 1920 | 87·46 | |
| 1921 | 90·06 | |
| 1922 | 68·29 | |
| 1923 | 71·57 | |
| 1924 | 82·88 | |
| 1925 | 76·76 | |
| 1926 | 68·12 | |
| 1927 | 110·08 | |
| 1928 | 106·25 | |
| 1929 | 102·04 | |
| 1930 | 68·87 | |
| 1931 | 101·08 | |
| 1932 | 103·17 | |
| 1933 | 121·83 | |
| 1934 | 66·35 | |
| 1935 | 81·79 | |
| 1936 | 90·49 | |
| | 90·73 | |

## REVISED PRICES OF NURSERY PLANTS AND SUPPLIES.

1. The prices of plants do not include the cost of the box or package, for which a charge will be made if not returned to the Department. The cost of delivery is usually included in the prices. Exceptions to this rule will be made at the discretion of the Agricultural Superintendent.

2. All prices specified are for plants of standard quality. The prices of plants not included in this list will be fixed by the Agricultural Superintendent.

3. An addition of 100% is made on the price of all plants supplied for export from the Colony.

4. No plants are supplied on Public Holidays.

5. At least six months previous notice must be given when large numbers of such plants as bananas, coconuts, coffee, cacao, nutmegs, citrus, cane plants, &c., are required. All such orders should be in writing, and verbal or telephone messages should be confirmed in writing. In default of this rule such orders may not be attended to.

6. All orders will be supplied subject to the discretion of the Agricultural Superintendent and no responsibility is taken in regard to quality or quantity of plants after despatch from the Nurseries.

7. Complaints as to the quality or quantity of plants, &c., supplies, or as to the prices charged, should be made in writing to the Agricultural Superintendent at the time of delivery.

### I. PLANTS.

| | *s.* | *d.* | |
|---|---|---|---|
| Banana Plants (sections or suckers) | | 1 | per plant (undelivered). |
| Oranges Budded | | 3 | per plant. |
| Oranges Sour | | 6 | per hundred. |
| Grapefruit Budded | | 3 | per plant. |
| Lime Plants Budded/Grafted | | 3 | per plant. |
| Mangoes Budded/Grafted | | 6 | to 1*s.* per plant. |
| Coffee Plants | 1 | 0 | to 2*s.* per hundred. |
| Cacao Budded | | 2 | per plant. |
| Nutmegs Grafted | | 6 | per plant. |
| Avocado Pears | | 2 | to 3*d.* per plant. |
| Avocado Grafted | | 2 | to 3*d.* per plant. |
| Cane Plants | 1 | 0 | per hundred (undelivered). |
| Pineapple Plants | | 1 | to 3*d.* per plant. |
| Eucalyptus | 2 | 0 | per hundred. |
| Casuarina | 2 | 0 | per hundred. |
| Palms (various) | | 3 | per plant. |
| Ornamental Plants (various) | | 2 | to 1*s.* per plant. |
| Seeds (various) | | 2 | and 3*d.* per packet. |
| Plants for windbreaks, hedges, &c., other than the above mentioned | 2 | 0 | per hundred. |
| Grass and Fodder Plants | 1 | 0 | to 2*s.* per hundred (undelivered). |
| Cover Crops and Green Manures | | 2 | per lb. |

### II. FUNGICIDES, INSECTICIDES, AND SUNDRIES.

Prices subject to change without notice.

| | | | *s.* | *d.* |
|---|---|---|---|---|
| Sulphemulsol, fungicide and insecticide | ... | per gal. | 1 | 4 |
| Carbon bi-sulphide | ... | per gal. | 2 | 4 |
| Paris Green | ... | per lb. | 1 | 4 |
| Copper Sulphate | ... | per lb. | 0 | 8 |
| Soil Insecticide | ... | per lb. | 0 | 5 |
| Whale-oil Soap (concentrated) | ... | per lb. | 0 | 11 |
| Gas-oil—Panama disease killer | ... | per gal. | 0 | 10 |
| Cattle Tick Wash (concentrated) | ... | per gal. | 5 | 3 |
| Sheep and Dog Tick Wash (concentrated) | ... | per gal. | 3 | 5 |
| Tobacco Insecticide (XLALL concentrated) | ... | per pint. | 3 | 0 |
| Ostico grease banding | ... | per lb. | 1 | 3 |
| Raffia | ... | per lb. | 1 | 4 |

### III. FERTILISERS AND MANURES.

Prices subject to change without notice. Quotations based on market prices.

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| P. E. TURNER, M.SC., F.I.C. ... ... | Adviser in Sugar-cane Experiments to the Commissioner of Agriculture. |
| J. G. MYERS, SC.D., F.E.S., F.Z.S., (attached) ... | Biological Control Research Officer. |
| H. E. BOX, F.E.S., (attached) ... ... | Entomologist. |

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| H. R. BRITON-JONES, D.SC., PH.D., D.I.C., A.R.C.S. | Professor of Mycology and Bacteriology |
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| F. W. URICH, F.E.S., C.M.Z.S., V.D. ... ... | Assistant Professor of Entomology. |

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| N. WRIGHT, A.R.C.S., B.SC. ... ... | Lecturer in Botany. |
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| J. G. DAVIES, Dip. Agr., A.I.C.T.A. ... ... | Sugar Technologist. |
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